TWENTY NINTH

ANNUAL REPORT
(1999 - 2000)

APRIL 1999 to MARCH 2000

DIRECTORATE OF RESEARCH

TAMIL NADU AGRICULTURAL UNIVERSITY

COIMBATORE – 641 003

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TWENTY NINTH

ANNUAL REPORT

(1999 - 2000)

Compiled by

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DIRECTORATE OF RESEARCH

TAMIL NADU AGRICULTURAL UNIVERSITY

COIMBATORE – 641 003

TWENTY NINTH

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ANNUAL REPORT COMMITTEE

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Director of Research

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Director, CARDS

Dr. R.S. AZHAKIA MANAVALAN
Dean, HC & RI

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Director, S&CMS

Dr. S. UTHAMASAMY
Director, Extn. Edn.

Dr. K. MAYALAGU
Director, Publications

Dr. SABITA DORAISAMY
Director, CPPS

Dr. K. PALANISAMY
Director, WTC

ACKNOWLEDGEMENT

The unstinted and whole-hearted support of the Chancellor, the Pro-Chancellor, the Chief Secretary and the Secretaries to the State and Central Government is gratefully acknowledged. The guidance from the members of the Board of Management, Academic Council, Research Council, Regional Research Councils and Extension Education Council was of great help in identifying emerging problems and frontier areas in agriculture for which the actions are to be taken.

Profuse thanks are due to Indian Council of Agricultural Research, World Bank and International Rice Research institute, Phillippines for their grants sanctioned to various developmental programmes. The University is also thankful to the State Government, Government of India, Rockefeller Foundation, University of Guelph, Natural Resource Institute, International Institute of Biological Control, Directorates of Agriculture, Horticulture and Agricultural Marketing, State Planning Commission etc., for their financial assistance to the University for undertaking research on specific problems.

The help and co-operation rendered by the University Officers, Teachers, Scientists, Students, Technicians and Administrative Supporting Staff besides and the Steering Committee Members and Task Force Committee Members are gratefully acknowledged. The University takes pride in thanking the farming community, agro-industrialists and general public of Tamil Nadu for their unstinted co-operation. The amiable linkage with the people of the state and functionaries at different levels has helped in making this University in Education, Research and Extension, as an Institution of Excellence in Agriculture.

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CHAPTER I

INTRODUCTION

This 29th Annual Report of Tamil Nadu Agricultural University for the period from 01.04.1999 to 31.3.2000 encompasses the significant developments and achievements in education research and extension activities in agriculture horticulture, forestry, agricultural engineering home science and allied fields

The curricula for various degree programmes in the University have been fine tuned in line with the demanding needs of the society and it helped in sustaining the higher standards of the graduates Further, the University was flexible and the composition of its programmes kept changing to accommodate the fast changing innovations The University library had been linked with the internet facilities The laboratories were strengthened with modern equipments Besides, field practicals have been provided with crop cafeteria model orchard, nutrition garden, herbal garden, etc

To meet the requirements of the farming community in different locations, there are 32 research stations located in seven agro-climatic zones of the Tamil Nadu state

The Directorate of Research of TNAU is making excellent efforts to continue all the research programmes with multi-disciplinary approach and due emphasis is given on location specific applied research to solve the field problems To enable multi-disciplinary research, the University has established Centres of Excellence The research findings are incorporated in Crop Production guide every year to update the technologies in the reference document which is used at all levels in the State for increasing the agricultural productivity Development of hybrid crops, transgenic plants, organic farming technologies, optimal cropping system for dry lands based on climatology, bio-pesticides, bio-control agents agricultural machineries and technologies for protected cultivation of vegetables and flowers, post-harvest technologies, export management and multi-media and multi-agency extension approach have continued to be the research priorities. Besides, Indian Council of Agricultural Research has initiated a major research programme *viz*., National Agricultural Technology Project for strengthening the national research system with the world bank assistance Indian Council of Agricultural Research has also funded a major research project for establishing a team of excellence on bio-fertilizers for rice and rice- based cropping systems Several sub-project proposals under different production systems have been sent for funding under National Agricultural Technology Project and many of them have been sanctioned during the period under report.

For sharing the research information among State Agricultural Universities and other sister institutions. Agricultural Research Information System (ARIS) is functioning at the head quarters and also in seven Zonal Research Stations. ARIS cell has been established at each station and main campus, and computers and other accessories supplied by ICAR have been provided and effectively utilized. At the main campus and at other six teaching campuses in the state, Local Area Net Work (LAN) has been established by connecting the computers available in different Directorates / departments / offices. A provision for nodes was made in all. Further, E-mail facility has been established at Coimbatore and in other stations this is in progress. A web site has also been created for hosting the same in the internet.

The Directorate of Extension Education is the main agency of the University involved in the transfer of technologies. The constituent units of this Directorate are (i) Communication Centre (ii) Information Centre (iii) Training Division and (iv) Video Library. The Communication centre conducted distance education programmes like correspondence courses, farm school on All India Radio, Audio and video cassette lessons for knowledge and skill upgradation of farmers and answers the farmers queries. The transfer of technology is effectively carried out by the five Krishi Vigyan Kendras and five Plant Clinic Centres located in seven agro-climatic zones.

The main aim of TNAU is to make available information obtained on the basis of research to the students, extension workers and agriculturists and to conduct training programmes for their benefit in cooperation with the respective government departments. The researchable problems are identified through discussions with the extension officials in the monthly zonal workshops of each district, interactions with farmers by scientists in Transfer of Technology Centres and Regional Research and Extension Advisory Council meetings, conducting Farmers Days in various teaching college campuses and research stations, Research and Extension council meetings, Crop Scientists meetings of individual crops by the lead centers such as rice, millets, pulses, oilseeds, cotton, forages, sugarcane, horticulture crops etc. and State Scientific Workers Conferences in Agriculture, Horticulture, Agricultural Engineering, Forestry and Sericulture.

The Directorate of Students' Welfare has been functioning in the University since 1994 with the objectives to bring out the hidden talents of students and developing them in sports, games, cultural events etc and to create awareness among the students to serve the people, by involving them in NSS, NCC etc. Activities like placement services, Entrepreneurship Development Programmes and Industry - Institution - Interaction cell Scheme are taken up. In addition, the students are trained in hostel administration. Under students counseling, programmes on career guidance *viz.*, guiding students for taking up higher studies in the national and international Universities are extended.

Thus, through the three pronged approaches like Teaching, Research and Extension, the Tamil Nadu Agricultural University is serving for the upliftment of the farming community.

The major achievements of the University during 1999-2000 are outlined here

Seventy six new research schemes were implemented during 1999-2000 They were University plan schemes (7) ICAR fully financed schemes (26), Govt of India schemes (8), International collaborative schemes (9) Private agency schemes (16) and State Govt schemes (10)

The efforts taken by the scientists of this University have helped in augmenting the productivity and hence the increased production of various agricultural and horticultural crops in this state Due to concerted efforts of scientists, sixteen new varieties / hybrids in both Agricultural and Horticultural crops and nine new farm equipments were released during the period for the benefit of the farming community In addition, various crop management technologies were also developed by the scientists of TNAU for adoption

Crop/tree varieties/hybrids released:

Rice	ADT 44
Fodder- cum- grain sorghum	K11
Samai	Paiyur 2
Blackgram	Vamban 3
Hybrid sunflower	TCSH 1
Hybrid coconut	VHC 3
Cotton	SVPR 3
Guinea grass	CO 2
Cumbu napier hybrid grass	KKM 1
Hybrid sapota	CO 3
Annual moringa	PKM 2
Peas	Ooty 1
Vegetable chilli	CO 4
Cashew	VRI 4
Oyster mushroom	MDU 2
Simaruba oil tree (Paradise tree)	Introduction

Farm equipments released

Tomato seed extractor
Pulper –cum- washer for coffee
Vacuum packaging of banana
Brinjal seed extractor
Biogas -cum -solar powered light trap
Direct paddy – green manure seeder for wetland
Power tiller operated auger digger – Model II
Power tiller operated turmeric harvester
Basinlister / broadbed former- cum- seeder attachment to cultivator

CHAPTER II

ADMINISTRATION

Administrative details of the University are briefly presented in this chapter

OFFICERS OF THE UNIVERSITY

Chancellor	Her Excellency Justice **M.FATHIMA BEEVI,** The Governor of Tamil Nadu
Pro Chancellor	**Thiru.VEERAPANDI S.ARUMUGAM** Hon'ble Minister for Agriculture
Vice-Chancellor	**Dr.A.Abdul Kareem (Upto 30.9.1999)** **Dr.S.Kannaiyan (From 11.10.1999)**
Registrar	**Dr.P.C.Sundara Babu i/c (From 1.10.1998 to 31.12.1999)** **Dr.M.Swamiappan (From 1.1.2000 to 11.3.2000 FN)** **Dr.M.Swamiappan (From 11.3.2000 regular)**
Director of Research	**Dr.T.V.Karivaradaraaju (Upto 11.3.2000)** **Dr.M.Subramanian (From 11.3.2000 AN)**
Director of Extn Education	**Dr.K.Chandrakandan (Upto 11.3.2000 FN)** **Dr.S.Uthamasamy (From 11.3.2000 AN)**
Dean(Agri), Coimbatore	**Dr.S.Kannaiyan ((Upto 11.10.1999)** **Dr.V.V.Sreenarayanan i/c (From 11.10.99 to 11.3.2000 FN)** **Dr.R.Annamalai (From 11.3.2000 AN)**
Dean(P.G.Studies), Coimbatore	**Dr.P.P.Ramaswami (Upto 31.8.1999)** **Dr.S.Kannaiyan i/c (From 1.9.1999 to 11.10.1999)** **Dr.V.V.Sreenarayanan i/c (From 11.10.19 to 17.11.1999)**

	Dr.S.Sadasivam i/c (From 18.11.1999 to 11.3.2000 FN) **Dr.T.Marimuthu (From 11.3.2000 AN)**
Dean, College of Agricultural Engineering, Coimbatore	**Dr.V.V.Sreenarayanan**
Dean, Horticultural College and Research Institute, Coimbatore	**Dr.S.Thamburaj (Upto 30.3.1999)** **Prof.S.Balaji i/c (From 1.7.1999 to 11.3.2000 FN)** **Dr.R.S.Azhakia Manavalan (From 11.3.2000 AN)**
Director, Centre for Plant Breeding and Genetics, Coimbatore	**Dr.R.Sethupathi Ramalingam i/c (Upto 30.11.1999)** **Dr.G.A.Palanisamy i/c (From 1.12.1999 to 11.3.2000 FN)** **Dr.C.Surendran (From 11.3.2000 AN)**
Director, Soil & Crop Management Studies, Coimbatore	**Dr.T.V.Karivaradaraaju i/c (Upto 11.3.2000 FN)** **Dr.T.M.Thiyagarajan (From 11.3.2000 AN)**
Director, Centre for Plant Protection Studies, Coimbatore	**Dr.P.C.Sundara Babu (Upto 31.12.1999)** **Dr.C.V.Sivakumar (From 1.1.2000 to 11.3.2000 FN)** **Dr.Sabitha Doraisamy (From 11.3.2000 AN)**
Director, Centre for Agri. and Rural Development Studies, Coimbatore	**Dr.C.Ramasamy**
Director, Water Technology Centre, Coimbatore	**Dr.A.Rajagopa (Upto 31.1.2000)** **Dr.K.Palanisamy i/c (From 1.2.2000 to 11.3.2000 FN)** **Dr.K.Palanisamy (From 11.3.2000 AN regular)**
Director, Centre for Plant Molecular Biology, Coimbatore	**Dr.S.Sadasivam**
Director of Publications, Coimbatore	**Dr.L.D.Vijendra Das (Upto 11.3.2000 FN)** **Dr.M.Mayalagu (From 11.3.2000 AN)**
Director of Students Welfare, Coimbatore	**Dr.R.Sethupathi Ramalingam (Upto 30.11.1999)** **Dr.P.Rajasekaran (From 1.12.1999 to 11.3.2000 FN)**
Director, Planning and Monitoring Coimbatore	**Dr.C.Ramasamy i/c (upto 11.03.2000)**

Controller of Examinations	**Dr.P.Rajasekaran**
Dean, Agricultural College and Research Institute, Madurai	**Dr.A.Regupathy (Upto 11.3.2000 FN)** **Dr.P.Rangasamy (From 11.3.2000 AN)**
Dean, Anbil Dharmalingam Agrl College and Res Instt, Tiruchirappalli	**Dr.K.Rajukannu (Upto 11.3.2000 FN)** **Dr.M.Sivanandam (From 11.3.2000 AN)**
Dean, Agricultural College and Research Institute, Killikulam	**Dr.A.Mohamed Ali (Upto 11.3.2000 FN)** **Dr.M.Muthusamy (From 11.3.2000 AN)**
Dean, Horticultural College and Res Institute, Periyakulam	**Dr.R.S.Azhakia Manavalan (Upto 11.3.2000 FN)** **Dr.T.Thangaraj (From 11.3.2000 AN)**
Dean, College of Agricultural Engineering, Kumulur	**Dr.N.Balasubramanian (Upto 11.3.2000 FN)** **Dr.R.Karunanithi (From 11.3.2000 AN)**
Dean, Forest College and Research Institute, Mettupalayam	**Prof.S.Balaji, I.F.S.**
Dean, Pandit Jawaharlal Nehru College of Agriculture and Research Institute, Karaikal	**Dr.A.Mohamed Hanifa (Upto 11.3.2000 FN)** **Dr.P.Selvaraj i/c (From 11.3.2000 AN)**
Director, Tamil Nadu Rice Research Institute, Aduthurai	**Dr.M.Subramanian (Upto 11.3.2000)** **Dr.S.Ramanathan (From 12.3.2000)**
Estate Officer	**Th.M.Mohammed Huzzain Sait (Upto 30.11.1999)** **Th.M.Mohammed Huzzain Sait (Extended for one year upto 31.11.2000)**
Comptroller	**Th.N.Sivakumar (Upto 30.6.1999)** **Dr.P.Rajasekaran i/c (From 1.7.1999 to 28.9.1999)** **Th.R.Varadarajan (From 29.9.1999)**

Meeting of the Board of Management and Important Decisions (1999-2000)

Four meetings of Board of management were conducted at TNAU, Coimbatore and the important decisions taken are given below

118th Meeting (11.06.1999)

Approved the recognition of College of Agricultural Engineering, Kumulur as Agricultural Engineering College and Research Institute Kumulur and the affiliation of Adiparasakthi Agricultural College, Kalavai Vellore District to the TNAU for offering B Sc (Ag) Degree Programme

119th Meeting (28.09.1999)

- Approved the starting of B Sc (Home Science) four year Degree Programme at Home Science College and Research Institute at Agricultural College and Research Institute campus, Madurai from the academic year 1999 – 2000 duly modifying the existing B Sc (Home Science) three year Degree Programme

- Approved the MOU to be entered into between the Tamil Nadu Agricultural University Coimbatore India and Eastern University, Sri Lanka for academic and research link and also between the Tamil Nadu Agricultural University, Coimbatore and four other Research Institutes / University at Sri Lanka to promote development and co-operation in various research and training programmes

120th Meeting (30.12.1999)

- Approved the conferment of Doctor of Science (*Honoris Causa*) on the following two eminent persons

  Dr. N. Mahalingam,
  Industrialist and Chairman
  Sakthi Group, Pollachi

  Dr. Kirti Singh,
  Former Chairman,
  Agril Scientists Recruitment Board,
  C II, 84 Mothi Bagh – 1,
  New Delhi – 110 021

- Approved the creation of a separate Department of Agricultural and Rural Management under the Directorate of CARDS, Coimbatore.

- Approved the permanent affiliation to Thanthai Roever Institute of Agriculture and Rural Development, Elembalur, Perambalur District to TNAU

- Approved the UGC Study leave Rules as stipulated in G.O. Ms. No 360 Agriculture (AU) Department, dated 16.08.1999 and the Guidelines formulated by the University

- Approved the implementation of TNAU Family Security Fund Scheme to the Pensioners of TNAU

121st Meeting (10.03.2000)

- *Approved the payment of honorarium / remuneration to the Scientists involved in initiating the sponsor of Research Project by outside agencies*

- Approved the establishment of an Urban Horticultural Development Centre at Chennai and to locate its office at No.5 Ramanathan Street Alagappa Nagar, Kilpauk, Chennai

CHAIRMAN & MEMBERS OF THE BOARD OF MANAGEMENT

Chairman :

Dr.A.Abdul Kareem (Upto 30.9.1999)
Vice-Chancellor,
Tamil Nadu Agricultural University
Coimbatore - 641 003

Prof. Dr.S.Kannaiyan (From 12.10.1999)
Vice-Chancellor,
Tamil Nadu Agricultural University,
Coimbatore - 641 003

Members :

Thiru N. Athimoolam, I.A.S.,
Secretary to Government,
Agriculture Department,
Fort. St George. Chennai - 600 009

Thiru.P.V.Rajaraman, I.A.S.,
Secretary to Government,
Finance Department,
Fort.St. George,
Chennai - 600 005

Dr.K.Arulmozhi, I.A.S.,
Director of Agriculture,
Chepauk, Chennai - 600 005

Thiru.S.K.Chaudhary, I.A.S.,
Commissioner of Horticulture and
Plantation Crops,
Chepauk, Chennai - 600 005

Thiru V.R.Chitrapu, I.A.S.,
Principal Chief Conservator of Forests,
Panagal Buildings, Saidapet,
Chennai - 600 015

Er.V.Venkataraman,
Chief Engineer (Agrl.Engineering),
328, Anna Salai, Nandanam,
Chennai - 600 035

Thiru A.R.Santhanakrishanan,
Managing Director,
S & S Industries and Enterprises,
58, Arcot Road (3rd Floor),
(Near Kamala Theatre),
Vadapalani,
Chennai - 600 026. Upto 24 01 1999

Thiru A. Ambalavanan,
S/o Annamalai Mudaliar,
3/ 59-A, Sikkal and Post,
Nagapattinam - 611 108. From 25 01 1999

Thiru A. Krishna,
Managing Director,
Cauvery Sugars and Chemicals Limited,
No.10, Ist Trustlink Street,
R A Puram, Chennai - 600 028. Upto 24 01 1999

Thiru A.D.Jeyam Pandian,
Chairman and Managing Director,
Pandian Estates Private Limited,
No 14, K.K.Nagar Main Road
Madurai - 625 020 From 24 01 1999

Thiru B. Arunkumar,M.L.A.,
(Mettupalayam Constituency)
3-A. Electricity Board Street
Co-operative Colony, Mettupalayam -641 301

Dr.S.M. Ilyas,
Asst Director General (IPI)
Indian Council of Agricultural Research
Krishi Bhavan
New Delhi - 110 001

Dr.Bal Kishore Tripathi,
Director
Sugarcane Breeding Institute
Coimbatore - 641 007 — From 30 05 1998

Thiru M.A.Jamal Moideen Papa,
"Pappa" Farm
Vilar
Thanjvur - 613 006

Thiru S.K.M.Maeilanandhan,
Chairman and Managing Director,
SKM Animal Feeds and Foods (India) Ltd., — From 30.05.1998
180, Gandhiji Road,
Erode - 638 002

Dr.Manmohan Attavar,
Chairman and Managing Director,
Indo-American Hybrid Seeds (India) Pvt. Ltd
Post Box No 7099
17th Cross 11-A, K R Road,
Bangalore - 560 070

Tmt.Shanthi Santhanam,
W/o Thiru G Santhanam, I A S ,
District Collector,
Race Course,
Coimbatore - 641 018 — From 30.05.1998

Prof.K.Fazlullah Khan,
Retd.Addl Director of Agriculture
A C 52, 4th Street, — From 30.05.1998
Anna Nagar,
Chennai - 600 040

Dr.P.C.Sundarababu Registrar, Tamil Nadu Agricultural University Coimbatore - 641 003	From 1 10 1998 to 31 12 1999
Dr.M.Swamiappan, Registrar, Tamil Nadu Agricultural University Coimbatore - 641 003.	From 1 1 2000 to 11 3.2000 FN From 11 3 2000 AN (Regular)

MEMBERS OF THE ACADEMIC COUNCIL

Dr.A.Abdul Kareem Vice-Chancellor	Upto 30 9 1999
Prof Dr.S. Kannaiyan Vice-chancellor	From 12 10 1999
Dr.P.C.Sundara Babu i/c **Dr.M. Swamiappan** Registrar	Upto 31 12 1999 From 1 1.2000 to 11 3.2000 FN From 11 3 2000 AN
Dr.T.V.Karivaradaraaju **Dr.M. Subramanian** Director of Research	Upto 11 3 2000 FN From 11 3 2000 AN
Dr.S.Kannaiyan **Dr.V.V.Sreenarayanan i/c** **Dr.R.Annamalai,Ph.D.,** Dean (Agri)	Upto 11 10 1999 Upto 11 3 2000 FN From 11 3.2000 AN
Dr.P.P.Ramaswamy **Dr.S.Kannaiyan i/c** **Dr.V.V.Sreenarayanan i/c** **Dr.S.Sadasivam i/c** **Dr.T. Marimuthu** Dean (PGS)	Upto 31.8.1999 Upto 11.10.1999 Upto 17.11.1999 Upto 11 3 2000 FN From 11 3.2000 AN
Dr.S.Thamburaj **Prof.S.Balaji i/c** **Dr.R.S.Azhakiamanavalan** Dean (Hort.)	Upto 30.6.1999 Upto 11.3.2000 FN From 11.3.2000 AN

Dr.S.Sadasivam Director, Centre for Plant Molecular Biology	
Dr.C.Ramasamy Director (CARDS)	
Dr.K.Chandrakandan	Upto 11.3.2000 FN
Dr.S. Uthamasamy	From 11.3.2000 AN
Director of Extension Education	
Dr.P.C.Sundara Babu	Upto 31.12.1999
Dr.C.V.Sivakumar	Upto 11.3.2000 FN
Dr.Sabitha Doraisamy	From 11.3.2000 AN
Director, Centre for Plant Protection Studies	
Dr.A.Rajagopal	Upto 31.1.2000
Dr.K.Palanisamy i/c	Upto 11.3.2000 FN
Dr.K. Palanisami	From 11.3.2000 AN (Regular)
Director, Water Technology Centre	
Dr.T.V.Karivaradaraaju i/c	Upto 11.3.2000 FN
Dr.T.M. Thiyagarajan	From 11.3.2000 AN
Director, Centre for Soil and Crop Management Studies	
Dr.C.Ramasamy i/c	Upto 11.3.2000
Director, Planning and Monitoring	
Dr.L.D.Vijendra Das	Upto 11.3.2000 FN
Dr.K. Mayalagu	From 11.3.2000 AN
Director of Publications	
Dr.R.Sethupathi Ramalingam	Upto 30.11.1999
Dr.P.Rajasekaran	Upto 11.3.2000
Director, Students Welfare	
Dr.R.Sethupathi Ramalingam i/c	Upto 30.11.1999
Dr.G.A.Palanisamy i/c	Upto 11.3.2000 FN
Dr.C. Surendran	From 11.3.2000 AN
Director, Centre for Plant Breeding and Genetics	
Dr.P.Rajasekaran Controller of Examinations	

Dr.R.S.Azhakiamanavalan	Upto 11 3 2000 FN
Dr.T.Thangaraj	From 11 3 2000 AN

Dean,
Horticultural College and Research Institute
Periyakulam - 641 003

Dr.(Mrs.) A.Susheela Thirumaran
Dean. Home Science College and
Research Institute — From 11 3 2000 AN
Madurai - 625 104

Dr.A. Regupathy	Upto 11 3 2000 FN
Dr.P.Rangasamy	From 11 3 2000 AN

Dean Agricultural College and Research Institute
Madurai – 625 104

Dr.A.Mohamed Ali	Upto 11 3 2000 FN
Dr.M.Muthusamy, Ph.D.,	From 11 3 2000 AN

Dean,
Agricultural College and Res Institute.
Killikulam, Vallanad Post - 628 252
Toothukkudi District

Dr.K.Rajukannu	Upto 11 3 2000 FN
Dr.M.Sivanandam	From 11 3 2000 AN

Dean,
Anbil Dharmalingam Agrl College and Res Instt
Navalur Kuttapattu, Tiruchirappalli - 620 009.

Dr.M.Balasubramanian	Upto 11 3 2000 FN
Dr.R. Karunanithi	From 11 3 2000 AN

Dean,
College of Agricultural Engineering.
Kumulur - 621 712.
Tiruchirappalli District.

Prof.S.Balaji.I.F.S.,
Dean (Forestry).
Forest College and Res Institute.
Mettupalayam - 641 301.

Dr.A.Mohammed Hanifa — Upto 11.3.2000 FN
Dr.P.Selvaraj i/c — From 11.3.2000 AN
Dean
Pandit Jawaharlal Nehru Agriculture
College and Research Institute,
Nedungadu Post,
Karaikal - 609 603

Dr.M.Subramanian — Upto 11.3.2000 FN
Dr.S. Ramanathan — From 11.3.2000 AN
Director
Tamil Nadu Rice Research Institute,
Aduthurai 612 101

Dr.R.Manian
Professor and Head,
Department of Farm Machinery

Dr.M.G.Dasthagir, Ph.D.,
Professor and Head,
Forest College and Res.Institute,
Mettupalayam - 641 301

Govt. Nominee and Experts

Th.N.Athimoolam, I.A.S.,
Secretary to Government (Agriculture),
Fort St George,
Chennai - 600 009

Dr.A.S.Prabhakar, Ph.D.,
Director of Instruction (PGS),
University of Agricultural Sciences,
Krishi Nagar, Dharwad - 580 005 (Karnataka)

Dr.(Mrs.) R.Vatsala,
Dean of Home Science,
Acharya N.G. Ranga Agricultural University,
Rajendranagar,
Hyderabad - 500 030

Prof.S.Kondas, I.F.S. (Retd.),
Formerly Principal Chief Conservator of Forests,
No.2, Jayammal Street,
Shenoy Nagar, Chennai - 600 030

MEETINGS OF THE ACADEMIC COUNCIL DURING 1999-2000
(AC.82, AC.83 AND AC.84)

The Academic Council met thrice and the following important decisions were taken

AC .82 (9.6.1999)

Recommended

The proposal on the alternative to part-time Ph D Programme in TNAU to the Board of Management for taking decision
To the Board of Management to take decision on the grant of affiliation for the Adhiparasakthi Agricultural College Kalavai, Vellore District

The following nomenclature and abbreviations for the following Diploma Courses offered in TNAU

Diploma in Agriculture - "D Ag"
Diploma in Sericulture - "D Seri"

The revision of fees for attestation of Certificates *viz*., Transcript Cards, Provisional Certificates, Degree Certificates for the consideration of the Board of Management and approval

The proposal for revising the cost of U G and P G admission application form from the academic year 2000 - 2001

The proposal for revising the cost of convocation application and introducing searching fee.

The proposal for collection of a penalty equivalent to tuition fees in addition to special semester fee from the students registering for special semester
Approved the rules for the following Endowment Awards/Prizes

Chief Guest **Dr. R. Chidambaram** Award
Special Guest **Dr. Ismail Sergeldin** Award
Janab **T.P.M. Mohammed Ameeth** Award
Janab **H. Peer Mohameed** Award
Dr. A. Abdul Kareem Award for the best M Sc (Ag.) student in Agricultural Entomology / Plant Nematology / Plant Pathology / Sericulture.
Dr. A. Abdul Kareem Award for the best Ph.D thesis in Plant Protection Studies in Agricultural Entomology / Plant Nematology / Plant Pathology / Sericulture.

Freedom Fighter **Shri. Rangasamy Naidu** Award
Thiru **SKM. Maeilanandhan** Award

Approved the proposed revised syllabus for Post-Graduate and Ph D programmes

AC.83 (28.9.1999)

Approved

- The revised rules and regulations 1999 of U G programmes for implementation from 1999 - 2000 academic year onwards
- The revised rules and regulations 1999 of P G Programmes for implementation from 1999 - 2000 academic year onwards
- Approved the decisions and recommendations of the 35th Meeting of the Recognition Committee held on 27 07 1999
- Approved the revised syllabus for B Sc (Ag) Programme for adoption in 1999-2000 academic year with certain observations suggested by the Academic Council
- Approved the revised syllabus of courses for I and II semester of B Sc (Horti) with the suggestions recommended by the 30th Board of Studies (Horti).
- Approved the revised syllabus and distribution of courses I and II semesters of four year B Sc (H Sc) Degree Programme
- Approved the revised syllabus and curricula for B Sc (Forestry) Programme with certain observations
- Approved the revised syllabus for B E (Agri.) with certain observations.
- Approved the syllabus for II year B.Tech (Food Process Engineering) with the modifications confirmed in the circulation Agenda of 32nd meeting of Board of Studies (Agricultural Engineering)

Recommended

- The draft of MOU to be entered into by TNAU with ACMEC Trust, Melmaruvathur to the Board of Management for approval
- The draft of MOU for execution by the TNAU and five Universities / Research Institutes of Sri Lanka to the Board of Management for approval.

A revised draft of Memorandum of Agreement to be signed by TNAU with ICRISAT for permitting two Ph D Scholars for doing their research work at ICRISAT Hyderabad

The proposal of starting B Sc Home Science four year Degree Programme at Home Science College and Research Institute in AC&RI Campus Madurai from the academic year 1999-2000 duly modifying the existing three year Home Science Degree Programme The Academic Council also recommended the B Sc (H Sc) in the schedule for the conduct of common entrance examination by the Anna University from the academic year 2000 – 2001 onwards

Academic Council accepted in principle and recommended the proposal to revise the existing rates of TNAU scholarship for P G Ph D students The Academic Council recommended revised rates of scholarships for P G / Assistantship for Ph D candidates

The results of Post-Graduate and Under-Graduate Degree Programmes and Diploma in Agriculture declared from 01 01 1999 to 31 08 1999 for approval by the Board of Management

. 84 (29.12.1999)

commended

To conduct the XXI Convocation at the end of March, 2000 according to the convenience of the Chancellor of TNAU The Academic Council recommended panel of names for inviting any one of them as Chief Guest in the order of priority for delivering the Convocation Address and also recommended two names of eminent persons for conferring the Doctor of Science (*Honoris Causa*) in the convocation

To the Board of Management the results of Post-Graduate and Under-Graduate Degree Programmes and Diploma in Agriculture declared from 01 09 1999 to 30 11 1999 for approval

Discussed in detail the UGC Study Leave Rules stipulated in G O Ms No 360 Agriculture (AU) Department dated 16 08 1999 and the guidelines formulated by the TNAU and recommended the same to the Board of Management for approval and implementation.

To the Board of Management for according permanent affiliation to Thanthai Roever Institute of Agriculture and Rural Development Elambalur, Perambalur district

- For creation of a separate department *viz* Department of Agricultural and Rural Management under the Directorate of CARDS at TNAU, Coimbatore Campus.

Approved the rules of the following Endowment Award/ Scholarship / College Prize

CHARMS Endowment Award (College Prize)
Pondicherry Agro Service and Industrial Corporation Award (College Prize)
Thiru B. Ramakrishnan Memorial Award (College Prize)
Potash and Phosphate Institute of Canada (PPIC) **Scholarship**
Dean Dr.S. Thamburaj - TNAU B.Sc. (Hort.) **Silver Jubilee Medal**
Dean Dr. R. Arumugam - TNAU B.Sc. (Hort.) **Silver Jubilee Medal**
Dean Dr. I. Irulappan - TNAU B.Sc. (Hort.) **Silver Jubilee Medal**
Prof. S. Kondas Medal
TAFCORN Medal
TANTEA Medal

Approved the Periyar Endowment Rules and Regulations and recommended to the Board of Management for approval as per the G.O.Ms.No.413 Agriculture (AU) Department dated 21.10.1998 and G.O.Ms.No.166 Agriculture (AU) Department dated 07.05.1999.

BOARD OF STUDIES OF THE FACULTY OF AGRICULTURE / HORTICULTURE / AGRI. ENGINEERING / FORESTRY

Faculty Dean concerned (Chairman) / other Deans within the Faculty
All Technical Directors
Controller of Examination
Heads of Departments of the concerned Faculty
All Professors of the concerned faculty
Two elected representatives of Associate Professors of concerned faculty
Four elected representatives of Assistant Professors of concerned faculty
Two Expert members from out side for each faculty

AGRICULTURE

Associate Professors

Dr.P.Balasubramanian,
Dept. of Agronomy,
Agricultural College and Research Institute,
Madurai - 625 104.

Dr.A.Vijayakumar,
Dept of Seed Technology,
Tamil Nadu Agricultural University,
Coimbatore - 641 003

Assistant Professors

Dr.A.John Joel,
Centre for Plant Breeding and Genetics
(Education Section -Dean's Office)
Tamil Nadu Agricultural University,
Coimbatore - 641 003

Dr.K.Balakrishnan,
Horticultural College and Research Institute,
Periyakulam - 625 604

Dr.M.Kalyanasundaram,
Dept of Agricultural Entomology,
Agricultural College and Research Institute
Killikulam, Vallanad - 628 252

Dr.K.Annadurai,
College of Agricultural Engineering,
Kumulur,
Trichirapalli - 621 712

Outside Experts

Dr.P.Balakrishna Pillai,
Dean,
College of Agriculture,
Kerala Agricultural University,
Vellayanai,
Thiruvananthapuram - 695 522

Dr.M.C.Devaiah,
Dean, University of Agricultural Sciences,
GKVK Campus,
Bangalore - 560 065.

HORTICULTURE

Associate Professor

Dr.R.Sankaranarayanan,
Horticultural College and Research Institute
Periyakulam - 625 604

Assistant Professors

Dr.T.N. Bala Mohan,
Sugarcane Research Station
Sirugamani
Trichirapalli – 639 115

Dr.T.Arumugam,
Horticultural College and Research institute
Tamil Nadu Agricultural University
Coimbatore - 641 003

Dr.A.Sadasakthi,
Agricultural College and Research Institute
Madurai - 625 104

Thiru.S.Nandakumur,
Horticultural College and Research Institute
Periyakulam - 625 604

Outside Experts

Dr.P.K.Rajeevan,
Professor and Head i/c.
Department of Pomology and Floriculture.
Kerala Agricultural University
College of Horticulture
Vellanikkara - 680 654

Dr. K.R.Melantha,
Professor of Horticulture and Head.
Division of Horticulture.
Univ of Agri. Sciences, GKVK.
Bangalore - 560 065.

AGRL. ENGINEERING

Associate Professors

Dr.L.Narayanan,
College of Agricultural Engineering
Kumulur
Tiruchirappalli - 621 712

Dr.V.M.Duraisamy,
Zonal Research Centre
College of Agricultural Engineering
Coimbatore - 641 003

Assistant Professors

Mrs.R.Lalitha,
College of Agricultural Engineering
Kumulur
Tiruchirappalli - 621 712

Dr.K.Alagusundaram,
College of Agricultural Engineering
Kumulur,
Tiruchirappalli - 621 712

Er.I.Muthuchamy,
Water Technology Centre
Coimbatore - 641 003

Outside Experts

Dr.T.Guruswamy,
Professor and Head,
Dept of Farm Power and Agro-Energy,
College of Agricultural Engineering,
UAS Dharwad, P.B No 24,
Raichur - 584 101, Karnataka

Dr.C.R.Sukumran,
Professor and Head,
Post Harvest Technology Centre,
(Acharya N.G.Ranga Agricultural University),
Agricultural College Campus,
Bapatla -522 101, Andhra Pradesh.

FORESTRY

Associate Professors

Dr.J.Sundarasingh Raja Pandian,
Associate Professor (Agronomy).
FC &RI, Mettupalayam – 641 301

Er.A.Shanmugam,
Associate Professor (Agri Engg.)
FC &RI, Mettupalayam – 641 301

Assistant Professors

Dr.M.Mohammed Yassin,
Assistant Professor (Agro-Forestry).
FC &RI, Mettupalayam– 641 301

Dr.K.Bhavanisankar,
Assistant Professor (Horticulture),
FC &RI, Mettupalayam – 641 301
Dr.K.Kumaran,
Assistant Professor (Forestry).
FC &RI, Mettupalayam – 641 301

Dr.N.P.Divya,
Assistant Professor (Forestry).
FC &RI. Mettupalayam – 641 301

Outside Experts

Thiru.R.Annamalai, I.F.S.,
Dean, Southern Forest Rangers College,
Coimbatore - 641 002.

Dr.B.S.Nada Gowdar,
Senior Scientist (Agro-Forestry),
University of Agricultural Sciences,
Dharwad -580 005.

BOARD OF STUDIES OF POST-GRADUATE EDUCATION

Dean, Post-graduate Studies	Chairman
Registrar, Deans and Directors in all Faculties	Members
Controller of Examination	Member
One Professor representing from each of the Faculties of Agriculture, Horticulture, Agricultural Engineering, Forestry and Home Science	
Dr.K.K.Mathan, Professor and Head, Department of Soil Science and Agricultural Chemistry, AC &RI, Coimbatore - 641003	Faculty of Agriculture
Dr.R.Kailappan, Professor and Head, Department of Agrl Processing, CAE, Coimbatore - 641 003	Faculty of Agricultural Engineering

Outside Experts

Dr.A.S.Prabhakar,
Director of Instruction,
Post-graduate Studies,
University of Agricultural Sciences,
Krishi Nagar, Dharwad - 580 005
Karnataka.

Dr.J.V.Venkataram,
Director of Instruction,
Post-graduate Studies,
University of Agricultural Sciences,
GKVK Campus,
Bangalore - 560 065.

BOARD OF STUDIES MEETINGS

For the period from 01.04.1999 to 31.03.2000

The board of studies meeting conducted for different faculties are detailed below

	Faculty	Date
XXXVI	Board of Studies (Agriculture)	on 17 09 1999
XXIX	Board of Studies (Horticulture)	on 07 06 1999
XXX	Board of Studies (Horticulture)	on 21 09 1999
XXXII	Board of Studies (Agrl Engineering)	on 07 06 1999
XIV	Board of Studies (Forestry)	on 04 06 1999
XV	Board of Studies (Forestry) by Circulation Agenda	on 06 12 1999

The Board of Studies (Agriculture) met once and recommended the following important subjects for consideration of the Academic Council

Board of Studies (Agrl.)

- Recommended the syllabus revision for various subjects of B Sc (Agriculture)

Board of Studies (Horticulture)

- Recommended the syllabi for the four year B Sc (Home Science) Degree Programme
- Recommended the curricula and syllabi for I and II Semester (1999 -2000)
- Recommended the model for evaluation (0+1) course in Horticulture
- Recommended the Horticultural courses for B Sc (Ag) programme under revised syllabi

Board of Studies (Horticulture)

- Recommended the syllabi for B Sc (Hort) from 1999-2000
- Recommended the syllabi for four year B Sc (Home Science) degree

Board of Studies (Agricultural Engineering)

- Recommended the revised syllabi for B E (Ag) formulated in line with the ICAR pattern

Board of Studies (Forestry)

Recommended the revised B.Sc (Forestry) syllabi in the light of the recommendation made by the ICAR

Recommended the equivalent courses in the 1994-99 syllabi for the students of 1991 batch rusticated for V, VI and VII Semesters

Board of Studies (Forestry) – By Circulation of Agenda dated 06.12.1999

Recommended to change the course SAC 331 Soil Survey and Land use Planning (1+1) to SAC 332 in the 1995 Syllabus

Recommended to provide one credit (0+1) for NSS

Recommended to adjust the excess credit load of (0+2) with the Forest Stay Programmes

RECOGNITION COMMITTEE MEMBERS

Registrar	Chairman
Dean(Agri.), AC &RI, Coimbatore	Member
Dean(PGS),TNAU,Coimbatore	Member
Dean(Hort.), Coimbatore	Member
Dean, CAE, Coimbatore	Member
Dean(Forestry), FC &RI, Mettupalayam	Member
Deputy Registrar (Education), Coimbatore	Member
Controller of Examinations, Coimbatore	Member

Meeting :

XXXVth Recognition Committee Meeting on 27.07.1999 discussed the request from the Registrar, Forest Research Institute, Deemed University, Dehradun to recognize the Ph.D Degree of Forest Research Institute, Dehradun on reciprocal basis and suggested the following recommendation to the Academic Council for approval

The Ph.D. Degree in Forestry awarded by the Forest Research Institute, Deemed University (Indian Council of Forestry Research and Education), Dehradun can be recognized by TNAU on reciprocal basis by recognizing the Ph.D. Degree in Forestry of TNAU by the Forest Research Institute, Dehradun

The Recognition Committee discussed in detail the request of the candidate Mrs. P.K. Balasankari, SRF, Department of Farm Power and Machinery, Coimbatore for recognizing M.Engg. Degree in Agricultural Machinery and Management of

Asian Institute of Technology Thailand and accorded recognition of the degree as eligibility for Ph D Programme in Farm Power and Machinery in TNAU

CHANGES IN THE CURRICULUM

Under-graduate Degree Programme

The 83rd Meeting of the Academic Council held on 28 09 1999 approved the revised Curriculum for 1999-2000 academic year

Based on the ICAR guidelines, the syllabi for all the courses *viz.*, B Sc (Agri) B Sc (Forestry), B E (Agri) B Sc (Home Science) and B Tech (FPE) have been revised for 1999-2000 academic year

The syllabi have been revised to meet the needs and requirements of clientele and newly emerging trends in agricultural education In the revised syllabus, the number of courses has been reduced to 63 from 69 ie a reduction of six courses and there is no course without practical Based on the recommendations of Broad Based Advisory Group 13 new courses have been included in the new curriculum which will go a long way for the students in developing their skill knowledge and entrepreneurship The credits for RAWE have been increased from 9 to 12 The credits for courses on self employment have also been increased from (0+2) to (0+4)

Post-graduate Degree Programme

The 82nd Meeting of the Academic Council held on 09 06 1999 has approved the revised curricula and syllabi The syllabi were revised last in the year 1994 The syllabi have been revised for all the 25 Master's degree programmes and 20 Ph D degree programmes now offered in Tamil Nadu Agricultural University from 1999-2000 academic year

The general principles followed in the revision of syllabus are :

To seek and cultivate new knowledge
To refine old knowledge in the light of new demands and discoveries
To identify and develop different areas of science
To develop inter-disciplinary teaching modules
More flexibility in courses
Practical oriented courses designed
To create curiosity, problem solving ability and originality
The revisions are dynamic and need based
To meet societal needs

The revision was done to attract the students based on the contents of syllabi and not merely on the name and fame of University

UNDER-GRADUATE EDUCATION

The number of students passed out and admitted in the different under-graduate degree programmes are furnished below

Name of the Degree Programme	Number of Students passed out (01 4 99 to 31 03 2000)	Number of Students admitted (1999-2000)
B Sc (Ag)	321	318
B Sc (Hort)	65	60
B E (Ag)	49	29
B Sc (Home Science)	25	20
B Sc (Forestry)	21	16
B Tech (Food Process Engg)	-	18
Total	481	461

POST - GRADUATE EDUCATION

Discipline	No of students Passed out (1999-2000)	No of students admitted (1999-2000)
Coimbatore		
M.Sc.(Ag.)		
Agronomy	15	9
Plant Breeding and Genetics	10	14
Agricultural Entomology	9	14
Soil Science & Agrl.Chemistry	9	10
Agricultural Economics	5	12
Agricultural Extension	6	11
Agricultural Microbiology	10	10
Seed Science & Technology	8	10
Crop Physiology	-	5

Agrl Marketing Management	4	5
Plant Protection	-	-
Plant Pathology	9	12
Sugarcane Production	2	-
Farming System Management	-	-
Plant Nematology	3	3
Water Management	-	-
M.Sc(Hort.)	16	21
M.E.(Ag.)		
Farm Power and Machinery	3	5
Soil and Water Conservation	-	5
Bio-energy	-	-
Agricultural Processing	8	6
Water Management	-	-
Agro-Energy and Power	-	-
Master of Business Management	4	5
M Sc (Bio-Technology)	7	8
M Sc (Environmental Sciences)	3	5
Post-graduate Diploma in Sericulture	-	-
M Sc Sericulture	-	-
Madurai		
Agronomy	4	9
Plant Breeding and Genetics	8	8
Agricultural Entomology	3	8
Soil Science & Agrl. Chemistry	-	6
Agricultural Microbiology	-	5
Agricultural Economics	-	5
Agricultural Extension	9	10
Plant Pathology	5	5
Crop Physiology	-	-
M.Sc.(Food Sci. & Nutrition)	9	14
M.Sc.(Hort.)	4	2
Killikulam		
Agronomy	5	5
Plant Breeding and Genetics	5	5
Agricultural Entomology	2	4

Soil Science and Agrl Chemistry	2	3
Agricultural Economics	-	-
Agricultural Extension	3	-
Periyakulam		
M Sc(Hort)	4	5
Mettupalayam		
M Sc(For)	5	10
Ph.D.		
Coimbatore		
(Faculty of Agriculture)		
Agronomy	6	14
Plant Breeding and Genetics	6	8
Agricultural Entomology	4	7
Soil Science & Agrl Chemistry	5	5
Agricultural Extension	6	6
Agricultural Microbiology	5	6
Crop Physiology	2	2
Seed Science and Technology	4	-
Plant Pathology	7	7
Agricultural Economics	3	4
Econometrics	-	-
Environmental Sciences	1	2
Plant Nematology	2	2
Plant protection	-	-
Faculty of Horticulture	6	11
Faculty of Bio-Technology	3	3
Faculty of Forestry	-	5
Agricultural Engineering		
Farm Power and Machinery	-	4
Soil and Water Conservation	1	4
Bio-energy	-	-
Agricultural Processing	1	4

Madurai

Agronomy	1	6
Plant Breeding and Genetics	2	2
Agricultural Entomology	1	4
Plant Pathology	1	5
Soil Science and Agrl Chemistry	1	2
Food Science and Nutrition	-	4
Econometrics	-	-
Agricultural Microbiology	-	-
Seed Sci & Tech	-	1

CONVOCATION

The XXI Convocation was conducted on 19 04 2000 at TNAU, Coimbatore. Her Excellency, the Governor of Tamil Nadu and the Chancellor of Tamil Nadu Agricultural University Justice M FATHIMA BEEVI awarded the Degrees to the graduates. Totally 800 candidates were awarded got their Degree Certificates in various disciplines. A total of 355 candidates applied for IN PERSON and 445 IN ABSENTIA

Dr. Kirti Singh, Secretary, National Academy of Agricultural Sciences and Former Chairman, Agricultural Scientists Recruitment Board, New Delhi was the chief guest and delivered the convocation address

During the Convocation, the Degree of Doctor of Science (*Honoris Causa*) was conferred upon **Dr.Kirti Singh**, Secretary, National Academy of Agricultural Sciences and Former Chairman, Agricultural Scientists Recruitment Board, New Delhi and **Dr. N. Mahalingam**, Chairman, Sakthi Group of Companies, Coimbatore.

SCIENTISTS DEPUTED ABROAD TO PARTICIPATE IN SEMINAR/CONFERENCE/WORKSHOP/TRAINING

Sl.No.	Name of the Scientist	Place of visit	Period	Purpose	Sponsoring Agency
1.	Dr. T.V. Karivaradaraaju Director of Research, TNAU, Coimbatore	Australia	27 04 99 to 03 05 99	To participate in the first workshop of the ACIAR Project at Brisbane and Toowoomba, Australia and discussion with Dr. Huda, UWSH.	ACIAR
2.	Dr.T.N. Balasubramanian Prof. and Head, Dept. of Agrl.Meterorology TNAU, Coimbatore	Australia	27 04 99 to 03 05 99	To participate in the first workshop of the ACIAR Project at Brisbane and Toowoomba. Australia and discussion with Dr. Huda. UWSH	ACIAR
3.	Dr. N. Asokaraja Asst. Professor (Agro) WTC, TNAU, Coimbatore	ISRAEL	28 04 99 to 27 10 99	To undergo the post Doctoral training at Volcani Centre. Israel	ISRAEL Government
4.	Dr. R. Samiyappan Professor, (Pl Pat), Dept of Plant Pathology TNAU, Coimbatore	U S A	01 05 99 to 31 07 99	To carryout the collaborative Research Studies at the Kansas State University	Rockefeller Foundation
5.	Dr. V Ravi Assoc. Professor(Agro) SW&MRI, Thanjavur	Philippines	03 05 99 to 28 05 99	To participate in the International Training Course on Modern Rice Farming for Asia at IRRI Philippines	IRRI, Philippines

6.	Dr. S. Raguraman, Asst. Professor (Ent) Dept of Agrl. Entomology AC&RI, Madurai	Canada	19 05 99 to 21 05 99	To participate in the World Neem Conference to be held at Vancouver Canada	Sponsoring Agencies
7.	Dr. A. Regupathy Dean, AC&RI, Madurai	Canada	19 05 99 to 21 05 99	To participate in the World Neem Conference to be held at Vancouver, Canada	Own arrangement
8	Dr. T S Raveendran Prof. & Head, Dept of Cotton, TNAU, Coimbatore	USA	24 05 99 to 28 05 99	To attend the training on Operation and Maintenance of High Volume Instrument for measuring Cotton fibre quality at USA	M/s Zellweger Uster, USA
9.	Dr. N. Muthukrishnan Asst. Professor (Ento) Dept of Agrl. Entomology, AC&RI, Madurai	Canada	01 06 99 to 13 06 2000	To avail the Rockfeller Foundations Post Doctrol Fellowship for 2nd year for his advanced study at the Univ of Ottawa	Rockefeller Foundation
10	Dr. D. Ananthakrishnan Assoc. Professor (Ag Engg) Dept of Farm Machinery, TNAU, Coimbatore	Thailand	04 06 99 to 21 08 99	To undergo the training programme on Design of Agrl. Machinery and Manufacturing Systems at Asian Instt. Of Technology, Bangkok, Thailand	AHRDP

11.	Dr. B. Sridhar Asst. Professor (Ag. Engg). Dept of Farm Machinery, TNAU, Coimbatore	Thailand	04 06 99 to 21 08 99	To undergo the training programme on Design of Agrl. Machinery and Manufacturing Systems at Asian Instt of Technology. Bangkok. Thailand.	AHRDP
12.	Dr.P.Ramasamy, Asst. Prof.(PB&G), Dept.of Millets, TNAU,Coimbatore.	U.S.A.	07.06.98 to 06.06.99	To avail the Rockefeller fundations Post Doctoral Fellowship for 2nd year for his advanced study at Texas A & M University, USA.	Rockefeller Foundation
13.	Dr. T.V. Karivaradaraaju Director of Research TNAU, Coimbatore	Canada And Australia	18.06.99 to 01 07 99	To visit the University of Guelph, Canada to study some of the models under Distance learning Programme for seed Technology Project and visit	Rockefeller scheme.
14.	Dr.S.Kannaiyan, Dean (Agri.,) TNAU,Coimbatore.	Austria	20 06 99 to 24 06 99	To participate in the 19th World Conference on open learning and distance education at Vienna	EEC Funds London
15.	Dr. K. Palanisamy, Professor (Ag. Eco) WTC, TNAU, Coimbatore	U S A	28 06 99 to 08 08 99	To visit the International Food Policy Res Institute. Washington to write the final project report of the Ford Foundation funded tank study	Ford Foundation Scheme

16.	Dr R Krishnasamy Professor (SS&AC) Dept of SS & AC TNAU, Coimbatore	Austria	11 07 99 to 15 07 99	To participate in the 5th International Conference on BiogeoChemistry of trace elements at Vienna to present his paper	Organiser/ CSIR NAAS
17.	Dr. M. Maheswaran Asst.Professor (PBG) CPBG, TNAU Coimbatore	U S A	12 07 99 to 18 09 99	To avail the Rockefeller Foundation Biotechnology career fellowship to under take Research study at the Cornell University New York	Rockerfeller Foundation
18.	Dr.J R Kannan Bapu Asst Professor(PBG) NPKC, Vamban	U S A	15 07 99 to 14 07 2000	To avail the Rockfeller Post Doctoral Fellowship for 2nd year for his advanced study at Virginia Polytechnic and State University Blacksburg	AVRDC
19.	Dr A. Manickam Professor(Bio Chem) Dept of BioChemistry CPMB, TNAU, Coimbatore	Taiwan	15 07 99 to 14 09 2000	To undergo Post Doctoral Training at AVRDC Taiwan for a further period of two months	AVRDC
20.	Dr. A. John Joel, Asst. Professor(PBG) Office of Dean (Agri.) TNAU, Coimbatore	China	23 07 99 to 22 07 2000	To avail the Rockfeller Post Doctoral Fellowship for 2rd year for advanced study at Huazhong Agri University, China	Rockefeller Foundation

21	Dr. S. Elangovan Assoc.Professor(Eco.) Dept of Ag.Economics AC&RI, Madurai	Philippines	01 08 99 to 31 07 2000	To take up the Post Doctoral position at CREMNET IRRI, Philippines	IRRI
22	Dr. K Soorianathasundaram Asst. Professor (Hort.) Dept. of Pomology TNAU, Coimbatore	U K	03 08 99 to 13 09 99	To Undertake studies on Banana roots at the University of Reading Berkshire, U K	Foreign Agency Scheme
23	Tmt. A Shanthi Asst. Professor (Nematology. Dept of Pomology TNAU, Coimbatore	U K	03 08 99 to 16 08 99	To undergo training in vitro screening of bananas to nematodes at University of Reading Berkshire U K	Foreign Agency Scheme
24	Dr A Susheela Thirumaran Prof & Head Dept of Food Science and Nutrition, AC & RI Madurai	U S A & U K	04 08 99 to 18 08 99	To attend the World Soybean Research Conference VI at Chicaga USA to present her paper and visit her son at London	Own Funds
25	Dr S Mohan Kumar Asst Professor (Ag Ento) CPMB, TNAU, Coimbatore	U S A	09 08 99 to 08 08 2000	To avail the Rockfeller Foundations Post Doctoral Fellowship to pursue a research programme in Plant Genetics at Virginia Polytechnic Institute and State University Blacksburg	Rockfeller Foundation

26.	Dr. C. Udayasuriyan Assoc. Professor (Micro) CPMB, TNAU, Coimbatore	Singapore	22 08 99 to 21 02 2000	To carryout the collaborative Research at the Institute of Molecular Agro Biology, Singapore for a further period of six months	IMA Singapore
27.	Dr. G. Kalaichelvan Asst. Professor (Ag. Micro) Dept of Env. Sciences, TNAU, Coimbatore	Philippines	23 08 99 to 10 09 99	To Participate in the training on Soil & Water Biochemistry and Ecotoxicology at IRRI, Philippines	IRRI
28.	Dr. S. Suresh Assoc. Professor (Ag. Ento) Dept of Rice TNAU, Coimbatore	U K.	22 08 99 to 29 08 99	To participate in the second Bio Net International Global Workshop (BIGW 2) at Cardiff, U K	Organiser
29.	Dr.S.Sadasivam, Director, CPMB,TNAU, Coimbatore.	Thailand	20 09 99 to 24 09 99	To participate in the 1999 meeting of the International programme on Rice Biotechnology	Rockfellor Founded Project
30.	Dr. C. Ramasamy Director, (CARDS) TNAU, Coimbatore	Thailand	20.09.99 to 24.09.99	To participate in the 1999 meeting of the International programme on Rice Biotechnology	Rockfeller Foundation

31.	Dr. P. Balasubramanian Professor (Pl. Pat) CPMB, TNAU, Coimbatore	Thailand	20.09.99 to 24.09.99	To participate in the 1999 meeting of the International programme on Rice Biotechnology	Rockfeller Foundation Project
32.	Dr. R. Chandra Babu Assoc. Professor(Cr. Phy)	Thailand	20.09.99 to 24.09.99	To participate in the 1999 meeting of the International programme on Rice Biotechnology	Rockfeller Foundation Project
33.	Dr. P.Shanmugasundaram Professor (PBG) CPMB, TNAU, Coimbatore	Thailand	20.09.99 to 24.09.99	To participate in the 1999 meeting of the International programme on Rice Biotechnology	Rockfeller Foundation Project
34.	Dr. V. Udayasuriyan Assoc. Prof. (Ag.Micro) CPMB, TNAU, Coimbatore	Thailand	20.09.99 to 24.09.99	To participate in the 1999 meeting of the International programme on Rice Biotechnology	Rockfellor Foundtion Project
35.	Dr. P. Nagarajan Assoc. Professor (Biotech) CPMB, TNAU, Coimbatore	Thailand	20.09.99 to 24.09.99	To participate in the 1999 meeting of the International programme on Rice Biotechnology	Rockfeller foundation project
36.	Dr. D. Sudhakar Asst. Professor (PBG) CPMB, TNAU, Coimbatore	Thailand	20.09.99 to 24.09.99	To participate in the 1999 meeting of the International programme on Rice Biotechnology	Rockfeller foundation project

37.	Dr. Kapil Deo N. Singh Asst. Professor (Bio Tech) CPMB, TNAU, Coimbatore	Thailand	20 09 99 to 24 09 99	To participate in the 1999 meeting of the International programme on Rice Biotechnology	Rockfeller foundation project
38.	Dr. M. Maheswaran Asst. Professor (PBG) CPMB, TNAU, Coimbatore	Thailand	20 09 99 to 24 09 99	To participate in the 1999 meeting of the International programme on Rice Biotechnology	Rockfeller foundation project
39.	Dr. R. Samiappan Professor (Pl. Path) Dept of Pl. Pathology TNAU, Coimbatore	Thailand	20 09 99 to 24 09 99	To participate in the 1999 meeting of the International programme on Rice Biotechnology	Rockfeller foundation project
40	Dr. S. Sukumur Assoc. Prof (Biotech) CPMB, TNAU, Coimbatore	Thailand	20 09 99 to 24 09 99	To participate in the 1999 meeting of the International programme on Rice Biotechnology	Rockfeller foundation project
41.	Dr. R. Velazhagan Asst. Professor (Pl. Pat) Dept of Pl. Pathology TNAU, Coimbatore	Thailand	20 09 99 to 24 09 99	To participate in the 1999 meeting of the International programme on Rice Biotechnology	Rockfeller foundation project

42.	Dr. T M. Thiyagarajan Professor (SS&AC) Dept of SS&AC TNAU. Coimbatore	Philippines	15 11 99 to 14 12 99	To visit the IRRI Philippines as a visiting NARS Scientist to prepare the first draft of the reports	CREMNET IRRI
43.	Dr. A. Manickam Professor(Bio-Chemistry) Dept of Bio-Chemistry TNAU. Coimbatore	Taiwan	15 09 99 to 03 10 99	Extension of Post Doctoral Training at AVRDC Taiwan	AVRDC Taiwan
44	Dr. S.K. Ganesh Asst. Professor (Agrl Botany) Dept of Plant. Br and Genetics AC&RI. Madurai	USA	24 09 99 to 23 09 2000	To avail the Rockefeller Foundations Post Doctoral Fellowship for his advanced studies at Texas Tech University. USA	Rockfeller Foundation
45.	Prof. S. Balaji IFS Dean. FC&RI Mettupalayam	Slovenia Europe	04 10 99 to 08 10 99	To participate in the International Union of Forestry Research Organization (IUFRO) working party S6 06 03 Extension Symposium 1999 at Slovenia	ICAFRE Scheme
46.	Dr P Balasubramanian Professor (Pl. Path) CPMB. TNAU Coimbatore	U K	05 10 99 to 04 02 2000	To carryout the collaborative research at John Innes Centre U K under the Rockefeller Foundations Biotechnology Fellowship	Rockfeller Foundation Funds

47.	Dr. A. Rajagopal. Director, Water Tech. Centre. TNAU, Coimbatore	Zimbabwe	14 10 99 to 01 11 99	To participate in the FAO Workshop and Training on Planning Design and Implementation of Localised Irrigation systems for small holder to deliver a lecture at Harare, Zimbabwe	FAO
48.	Dr. I. Muthuchamy Asso. Professor (SWC) WTC, TNAU, Coimbatore	Zimbabwe	24 10 99 to 30 10 99	To participate in the FAO Workshop and Training on Planning Design and Implementation of Localised Irrigation systems for small holder to deliver a lecture at Harare. Zimbabwe	FAO
49.	Dr. I. Muthuchamy Asso. Professor (SWC) WTC, TNAU, Coimbatore	Zimbabwe	31 10 99 to 30 11 99	To take up the FAO first assignment Drip Irrigation Mission in Zimbabwe	FAO
50.	Dr. L.D. Vijendra Das Director of Publications TNAU, Coimbatore	Israel	01 12 99 to 20.01 2000	To Participate in the International Course on Desert Agrobiology in Israel	Israel Govt. and own funds
51.	Dr. N. Srinivasan Prof and Head Dept of Agri.Economics TNAU, Coimbatore	Japan	10.11.99 to 18.11.99	To participate in the seminar on Marketing Extension at Japan	Govt. of Japan/ICAR Development Grant

52.	Dr. SP. Sundram Professor (Micro.) HC&RI, Periyakulam	Thailand	07 12 99 to 13 12 99	To participate in the Intellectual property Management workshop at Bangkok	ISAAA
53.	Dr. K. Palanisami Professor (Agr.Eco.) WTC, TNAU, Coimbatore	JAPAN	06 12 99 to 26 12 99	To Visit the National Institute for Environmental Studies, Japan to prepare the final report of the collaborative project.	NIES, Japan
54.	Dr. R. Velazhahan Asst. Professor (Pl. Path.) Dept of Pl. Pathology, TNAU, Coimbatore	USA	04 01 2000 to 03 04 2000	To avail the Rockfeller Foundations award for Rice Bio-Technology Career Fellowship for a study of genetic engg of *Thaumatin like protein in rice for* management of major fungal diseases at Kansas State University USA	Rockfeller Foundations
55.	Dr. S. Krishnaveni Asso. Professor (Bio-Che) Department of Oilseeds, TNAU, Coimbatore	USA	20 08 99 to 19 02 2000	Extension of period to work as a Research Associate on a Research project on Sorghum Transformation for disease resistance at Kansas State University USA	Kansas State University
56	Dr. P K Selvaraj Asso. Prof (SWC) Agricultural Research Station, Bhavanisagar	Iran	30 12 99 to 29 02 2000	To take up the FAO consultancy assignment to work on improvement of Trickle Irrigation system in Pistachio Orcharas in the Kerman province Tehran	FAO

57.	Dr. K. Ramaraju Asso. Professor (Agrl Ent) Departmnet of Ag Entomology TNAU, Coimbatore	Sri Lanka	06 01 2000 to 08 01 2000	To participate in the International Workshop on Biology and Control of Coconut Mite at Coconut Research Station Sri Lanka	ICAR Development Grant
58.	Dr S Mohan Asso. Professor (Ento) Department of Cotton TNAU, Coimbatore	Canada	10 01 2000 to 09 04 2000	To undergo the training on Biochemical Ecology" at University of Manitoba Canada	AHRDP
59.	Dr. R. Jagannathan Asso Professor (Agron) Sugarcane Research Station, Sirugamani	Thailand	18 01 2000 to 22 01 2000	To participate in the Second International Conference on Vetiver at Thailand	Organisers
60.	Dr. T. Radhakrishnan Asso. Prof (Agrl. Extn) Dept of Agr. Extn AC & RI, Madurai	New zealand	26 01 2000 to 25 04 2000	To undergo the training on "impact of Continuous cultivation on soil fertility" at Massey University, New Zealand	AHRDP
61.	Dr. A. Saravanan Asso. Professor (SS&AC) Dept of SS&AC, TNAU Coimbatore	New Zealand	26 01 2000 to 25 04 2000	To undergo the training on "Impact of continuous cultivation on soil fertility" at Massey University, New Zealand	AHRDP

62.	Dr. M. Kannathasan Asso. Prof (SS&AC) Dept of SS&AC AC&RI, Madurai	New Zealand	26 01 2000 to 25 04 2000	To undergo the training on Soil toxicants and reclamation at Massey University. New Zealand	AHRDP
63.	Dr. S. Suresh Asso. Prof (Agrl. Ento) Department of Rice TNAU, Coimbatore	Canada	30 01 2000 to 29 07 2000	To undergo the training on "Computer Modelling of Forecasting in Pest Management" at University of Manitoba. Canada	AHRDP
64.	Dr. A. Rajarajan Professor (SS&AC) Dept of SS&AC TNAU, Coimbatore	USA	31 01 2000 to 30 07 2000	To undergo the training on "Dynamics of organic matter on soil health" at University of Florida. USA	AHRDP
65.	Dr P. Singaram Professor (SS&AC) Department of Olericulture TNAU, Coimbatore	Australia	11 02 2000 to 05 03 2000	To participate in the Training programme on Managing Soil Degradation at the University of Adelaide. Australia	University of Adelaide
66	Dr V. Geethalakshmi Asst Professor (Agro) Department of Agrl Mete) TNAU, Coimbatore	Australia	14 02 2000 to 19 04 2000	To undergo training programme and to attend the International Workshops on 'Participation decision making with farmers' and 'Farm Management decisions with climate risk' at Australia	ACIAR Colloborative project

67.	Dr.A Balakrishnan Asso. Prof (Agro) HC&RI, Periyakulam	Australia	14 02 2000 to 13 05 2000	To undergo the training on 'Educational Technology' at University of Western Sydney, Australia	AHRDP
68.	Dr S. Krishnaswamy Asso. Prof Dept of Agronomy, AC&RI, Madurai	Australia	14 02 2000 to 13 05 2000	To undergo the training on 'Educational Technology' at University of Western Sydney Australia	AHRDP
69.	Dr. B.J. Pandian Asso. Prof (Agro) AC&RI, Killikulam	Australia	14 02 2000 to 13 05 2000	To undergo the training Agro simatology at University of Western Sydney Australia	AHRDP
70.	Dr. G. Gajendran Asso. Prof (Agrl Ento) ADAC&RI, Trichy	Australia	14 02 2000 to 13 05 2000	To undergo the training on 'Educational Technology' at Univ of Western Sydney, Australia	AHRDP
71.	Dr. C. Chinnuswamy Asst. Prof (Agro) Department of Agronomy TNAU, Coimbatore	Australia	14 02 2000 to 13 05 2000	To undergo the training on 'Educational Technology' at University of Western Sydney, Australia	AHRDP

72.	Dr. V J. F. Kumar Professor (Farm Mach.) Dept of Farm Machinery CAE, TNAU, Coimbatore	Australia	14 02 2000 to 13 05 2000	To undergo the training on "Educational Technology" at University of Western Sydney. Australia	AHRDP
73.	Dr. R. Selvaraju Asst. Prof (Agro) Department of Ag. Meteo TNAU, Coimbatore	Australia	31 03 2000 to 11 06 2000	To undergo Training Programme and to attend the International Workshops on "Participation decision making with farmers" and "Farm Management decisions with climate risk" at Australia	ACIAR Collaborative Project

LIST OF NEW ENDOWMENTS FOR PRIZES / MEDALS INSTITUTED

Sl.No.	Name of the Endowment	Sponsor	Amount (Sponsored / Contributed)
1	Chief Guest and special Guest **Dr.Kirti Singh** Award	TNAU – General Fund	Rs. 20,000/-
2	Special Guest **Dr.N.Mahalingam** Award	TNAU – General Fund	Rs. 20,000/-
3	Best Department / Best College / Best Research Station of the year in TNAU	Award money of ICAR's Best Institution Award for the year 1998 presented to TNAU, Coimbatore	Rs.1,00,000/- (award money)
4	Endowment Awards / Scholarship / Medals in the name of Selvi **V. Gayathri, Selvi K. Hemalatha and Selvi V. Kokilavani** students of TNAU, who were burnt to death in the Dharamapuri bus set fire incident on 2.2.2000	Sanctioned by the Government of Tamil Nadu, Agriculture (AU) Department, Chennai	Rs. 10,00,000
5	**Dean Dr.S. Thamburaj** – TNAU B.Sc.(Hort)s Silver Jubilee Medal for the best M.Sc. (Hort.) thesis in Vegetables	The Vegetable Researchers of TNAU	Rs. 20,000
6	**Thiru P.M. Srinivasan** Endowment Award for the best P.G. student who scores highest OGPA in the Dept. of Entomology	Mrs. Rajam Srinivasan, W/o Th. P.M. Srinivasan Assoc. Professor Entomology (Retd.) Coimbatore	Rs. 20,000
7	Dean (PGS), **Dr.P.P. Ramaswami** Award for outstanding research in M.Sc. (Ag.) in SS&AC in the field of Rice Plant Nutrition	The present and old students of Dept. of Soil Science and Agricultural Chemistry, AC&RI, TNAU, Coimbatore / Madurai / Killikulam	Rs. 20,000

Prof. S. Kondas Medal for the best student in B.Sc (Forestry) who secures highest OGPA in Tree Breedings and Agro Forestry courses	The Faculty Members and the past and present students of FC&RI Mettupalayam	Rs 20.000
Dean Dr. R. Arumugam - TNAU B.Sc (Hort.)s Silver Jubliee Medal for the best M.Sc (Hort) thesis at Periyakulam and Madurai Campuses combined	Dr S Jayasankar Assistant in Horti Sci CFREC University of Florida Leesburg and Eleven other B Sc (Hort) graduates now residing at USA	Rs 20 000
Dean Dr. I. Irulappan - TNAU B Sc (Hort)s Silver Jubliee Medal for the best M Sc (Hort) thesis in breeding of Horticultural Crops	Dr S Jayasankar Assistant in Horti Sci CFREC, University of Florida Leesburg and Eleven other B Sc (Hort) graduates now residing at USA	Rs 20.000
Dr. P.C. Sundara Babu, Director, CPPS Gold Medal for best M Sc (Ag) thesis in Ecofriendly pest management in Plant Protection (Agricultural Entomology, Nematology, Plant Pathology and Sericulture) at TNAU	Some of the PG students, Staff, Well Wishers and Classmates of Dr P C Sundara Babu, the then Director (CPPS) and Former Registrar, TNAU	Rs 20,000
Dr. S.K. Ballal Endowment Award (in CPPS) for best student in Ph D	Dr S K Ballal, The Aluminus of TNAU Tennessee Techno-logical University, USA	US $ 500
Dr. S.K. Balla Endowment Award (in CPMB) for best student in Ph.D (Bio Technology)	Dr S K Ballal, The Aluminus of TNAU, Tennessee Technological University, USA	US $ 500

14	**Pattiveeranpatti Thiru K.T.M. Rathinasamy** - TNAU B Sc (Hort)s Endowment for the best M Sc (Hort) thesis in spices and plantation crops	Thiruvalargal R Jayachandran and R Theenachandran of Pattiveeranpatti	Rs 20,000
15	**TANTEA Medal** for best student in B Sc (Forestry) who secures highest OGPA in the courses offered by the Dept of Forest Biology in all the four years	M/s Tamil Nadu Tea Plantation Corporation Ltd . Coonoor	Rs. 20,000
16	Potash and Phosphate Institute of Canada (PPIC) Scholarship for the best student of the SS&AC subject based on the highest OGPA in UG Programme and also on approved synopsis of the research on Phosphorous in soil / crops of Tamil Nadu	Potash & Phosphate Institute of Canada - India Programme, Sector 19 Delhi - Gurgoan Road Gurgoan - 122 016 (Hatyana)	Rs. 1,25,000
17	**TAFCORN Medal** for best student in B Sc (Forestry) who secures highest OGPA in Silviculture courses	Shri K S Dehal, I F S Managing Director, Tamil Nadu Forest Plantation Corporation Limited, Tiruchirapalli	Rs 20,000
18	**Th. V.A. Thiruvengada Thevar** Award for the best student of UG level in Extn Education	Th VAT Sundararajan, Proprietor, VATS Coconut Product, 2/20B, Mavadukurichi, Peravurani - 614 804, Thanjavur District	Rs. 20,000

VICE-CHANCELLOR'S TOUR
(PERIOD FROM 1.4.1999 TO 31.3.2000)

Sl. No.	Name of the Vice-Chancellor	Date	Place	Purpose
1.	Dr.A.Abdulkareem	15.6.99 to 1.7.99	1. University of Western Sydney, Brisbane 2. The University of Guelph, Ontario Canada 3. Queensland Centre for climate application, Brisbane, Australia	1. To study the different models of distance learning and to try the same at TNAU 2. To discuss the collaborative seed production technology project 3. To discuss the on going collaborative schemes on Agro-meteorology for further strengthening research activities
2.	Dr.A.Abdulkareem	26.8.99 to 3.9.99	1. Eastern University, Srilanka 2. Peradinya University Srilanka	1. To deliver convocation address at Eastern University 2. To discuss on sabbatical leave and mutual collaboration on tea training, dry flower and floriculture training between TNAU and Institutions at Columbo
3.	Dr.A.Abdulkareem	20.9.99 to 24.9.99	Phuket, Thailand	To present a paper on Rice Bio-technology Scenario in TNAU – the present and the future in the International Conference on Bio-technology

CHAPTER III

EDUCATION

UG Degree Programme

Based on the ICAR guidelines, the syllabi for all the courses viz., B.Sc(Agri.), B.Sc(Hort.), B.Sc(Forestry), B.E(Agri.), B.Sc(Home Science) and B.Tech.(FPE) have been revised for 1999-2000 academic year to meet the needs and requirements of clientele and newly emerging trends in Agricultural Education. In the revised syllabus, the number of courses has been reduced to 63 from 69 i.e. a reduction of six courses and there is no course without practical. Based on the recommendations of Broad Based Advisory Group, 13 new courses have been included in the new curriculum which will go a long way for the students in developing their skill, knowledge and entrepreneurship. The credit hours for self employment have also been increased from (0+2) to (0+4).

P.G. Degree Programme

The eighty-second meeting of the Academic Council held on 9.6.1999 has approved the revised curricula and syllabi. The syllabus was revised last in the year 1994. The syllabi have been revised for all the 25 Master's degree programmes and 20 Ph.D. degree programmes now offered in Tamil Nadu Agricultural University from 1999-2000 academic year.

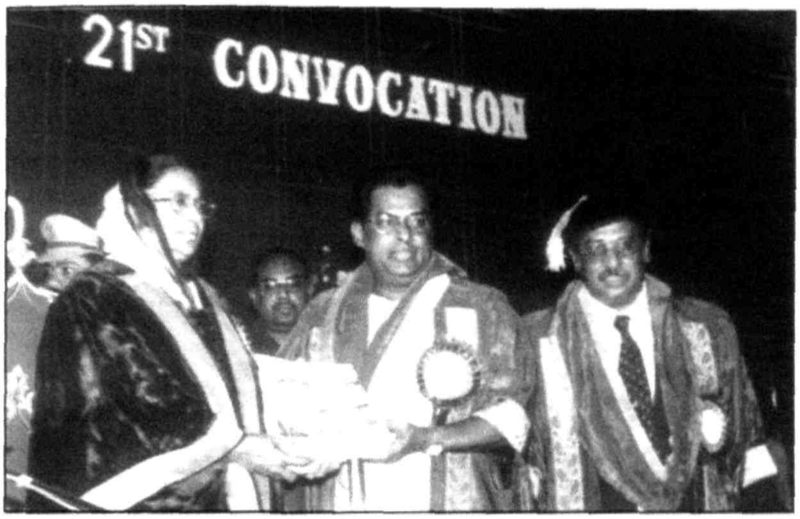
Hands on training

Hands on training, skill oriented training, Rural Agricultural Work Experience (RAWE), Commercial Agricultural Courses, Experiential Learning, Post Harvest Technology, Computer Applications, Environmental Sciences, Agricultural Biotechnology, Systems Agriculture, Organic Farming, Farming Systems, Natural Resource Management, Biological fertilizers, Biopesticides, Integrated Nutrient Management (INM) and Integrated Pest Management (IPM) etc., Sericulture courses are given top priority for imparting good basic foundation in terms of acquiring knowledge and skill.

Commercial Agriculture

Under this programme, the students are oriented for self-employment and entrepreneurship in areas like;

- Seed production
- Mushroom production



TNAU 21st Convocation

Vice Chancellor initiates students rice Cultivation

- Bio-pesticide production
- Bio-fertilizer production
- Broiler chicken production
- Nursery technology in Horticulture
- Food product development

Students choose one of these courses depending on their interest. Production techniques involved in the above areas are practiced and experienced by individual students which help them to gain self-confidence to start their own enterprises. Many of the students who have undergone these courses have started their own successful ventures in these fields.

RAWE Programme (Rural Agricultural Work Experience)

RAWF Programme (Rural Agricultural Work Experience) is a key component in the B Sc(Ag) programme. RAWE programme is imparted to the students to understand the real world situation in agriculture. The students are given rigorous orientation and familiarization programme on various issues and problems in the farmers field. The students are placed in different villages in a bunch of around 7 students per group. RAWE programme is planned by involving all the teachers in different subjects for improving learning capacity of the students in a typical village situation.

Placement

Placement services are made available to the students and the campus interviews were arranged as detailed below.

1. Harrisons Malayalam Limited, Chennai	7 4 1999
2. M/s Dhan Foundation, Madurai	3 5 1999
3. M/s Novartis Limited, Coimbatore	1 9.1999
4. M/s Dhan Foundation, Madurai	7&8 3.2000

Agricultural Human Resources Development Project (AHRDP)

Under this project so far 1122 staff members were trained in India and 90 teachers in various foreign countries like USA, UK, Australia, Philippines, Malaysia, Israel etc. Six teachers were sent on sabbatical leave to other Universities and National Institutes like IARI. Three foreign experts visited TNAU and gave suggestions to improve teaching and research.

Infrastructural facilities like 66 staff quarters, examination hall, hospital building annexe, modernisation of kitchen in students hostels, library annexe, new girls' hostels, academic block, computer centres, student welfare centres, modernization of lecture halls with teaching aids in all the seven teaching campuses at a cost of Rs.12.85 crores were provided. Besides, instrumentation centre was established. Around 350 computers worth Rs.3.36 crores were purchased and installed in all the teaching campuses. Foreign equipments worth of Rs.11.54 crores were imported and installed in various departments for use in the practical classes particularly by the UG students.

Books and periodicals worth of Rs 25 lakhs 6 buses 4 mini buses and 2 jeeps costing Rs.94 5 lakhs and furniture worth of Rs 52 lakhs were purchased and distributed to all the teaching campuses

In TNAU agricultural education is imparted in 10 colleges in seven campuses The educational activities carried out in these colleges are briefly outlined in this chapter

AGRICULTURAL COLLEGE AND RESEARCH INSTITUTE COIMBATORE

Students strength

Degree	Ist Year	IInd Year	IIIrd Year	IVth Year	Total
B Sc (Ag)	107	98	99	86	390

Tours

Educational	Short	Commercial
20 8 99 - 6 9 99 86 students Pusa Hissar Dehradun Jaipur Ludhiana Simla and Hyderabad	22 1 2000 - 2 2 2000 Madurai Periyakulam Killikulam Trichy Thanjavur Aduthurai Cuddalore and Paiyur	4 12 1999 10 students Namakkal Spawn and mushroom 198 Total student -9 12 99 Athur & Yercaud Seed Production 8-9 12 99 Athur & Yercaud (students 13)

RAWE (Rural Agrl. Work Experience) (21.10.99 – 8.1.2000)

Student	Places of stay
Boys 55 + Girls 46	Govindanur, Ayyampalayam pudur, Pudupalayam, Chittar, Sanichandai, Dharapuram, Alampalayam, S Malayandipatanam, Konde goundempalayam Thekkampatti, Thundansalai, Bangalpudur and P Vadugapalayam

HORTICULTURE COLLEGE AND RESEARCH INSTITUTE COIMBATORE

Students strength

Class	Boys	Girls	Total
M Sc (Hort)	14	27	41
Ph.D.	18	11	29

Tours

Educational tour		
Students	**Place of visit**	**Purpose of visit**
Senior M Sc(Hort)	One day field trip to M/s SKM Engg Power Unit	Study the industrial landscape
Senior M.Sc(Ag)	3 day trip to Cochin one day trip M/s Terra Agro Technologies	Study the spices industry

Scholarships

Name of the scholarship	No. of students	Amount	
		Received during the year	Disbursed during the year
ICAR	34	346403	266439
CSIR	2	69900	81175
SC S.ship	9	59533	40726
SC Loan	7	70000	42000
BC S.ship	5	8442	8442
ASPEE	2	14200	18200
ABT F/Ship	1	--	4000
DNC S.ship	1	1787	--
		570265	460982

AGRICULTURAL COLLEGE AND RESEARCH INSTITUTE MADURAI

Students Strength

Degree	I Year	II Year	III Year	IV Year	Total
B Sc (Ag)	95	99	109	83	286
M Sc (Ag)	69	65	-	-	134
Ph D	22	24	15	-	61

Scholarships

Twenty three students availed the scholarships offered by District Backward Class Welfare Office District Adidravider Welfare Office, Directorate of Collegiate Education ICAR ASPEE UGC etc

Awards

Nineteen students won the prizes for their best academic performance and nine got ICAR Fellowship for the P G programmes

NSS (national Social Service)

A special camp with 94 NSS volunteers (including 14 Home Science volunteers) was organized at Vellalur (Govt Higher Secondary School) village of Madurai and they conducted Agricultural Camp Environmental Awareness camp, Free eye camp, Self employment camp General Health and AIDS awareness camp, Women and Children awareness camp, Home Science and Nutrition Food camp, Social awareness and communal harmony Free veterinary medical camp and Waste land development programme

AGRICULTURAL COLLEGE AND RESEARCH INSTITUTE KILLIKULAM

Students Strength

Programme	I[st] Year	IInd Year	IIIrd Year	IVth Year	Total
B Sc(Ag)	64	89	84	104	341
M Sc(Ag)	16	18	-	-	30

Tours

S.No.	Years	Date	Places of visit
All India Study Tour			
	IV B Sc (Ag) (104)	13 11 99 to 29 11 99	Hyderabad, New Delhi, Jaipur, Dehradun, Simla, Agra and Chandigarh, Institutions NAARM, MANAGE, NIRD, EEI, DRR, CRIDA, ICRISAT, WTC, NPPTI, NBPGR, IARI.
Short Tour			
	II B Sc (Ag) (91)	22 01 2000 to 02 02 2000	Research Stations of Ambasamudram, Pechiparai, Srivilliputhur, Periyakulam, TNAU Coimbatore, Vedasanthur, Bhavanisagar, Paiyur, Vridhachalam, Aduthurai, Sirugamani, Trichy, Vamban, Maduari, Aruppukottai, Paramakudi, Ramanathapuram, Kovilpatti and Mettupalayam
Agro-Industrial tie-up programme			
	IV B Sc (Agri) (84)	14 06 1999 to 26 06 1999	Sixteen Industrial Units located in Tirunelveli, Kanyakumari and Thoothukudi districts

RAWE (Rural Agricultural Work Experience)

Ninety one students were placed in 14 Agricultural Divisions viz , Thiruchendur, Sattankulam, Vilathikulam and Ottapidaram of Thoothukudi district, Ambasamudram, Thenkasi, Senkottai, Sankarankovil, Sivagiri and Nanguneri of Tirunelveli district, Nagercoil, Boothapandi and Thuckalay of Kanyakumari district and Srivilliputhur of Virudunagar district

Scholarships

Scholarships / awards from eleven different sources to the tune of Rs.7,79,157 /- were disbursed to 201 students

NSS (National Social Service)

A special NSS camp was organised for 10 days at Murappanadu village of Tirunelveli district and they actively participated in Awareness campaigns on Forest Resource Protection, Environmental Awareness, Integrated Plant Protection, Arivoli Scheme, Youth Personality Development, Self Employment Development etc.

ANBIL DHARMALINGAM AGRICULTURAL COLLEGE AND RESEARCH INSTITUTE, TIRUCHIRAPPALLI

Students strength

Programme	Ist Year	IInd Year	IIIrd Year	IVth Year	Total
B Sc(Ag)	50	62	50	39	201
Spl Semester					4
		Total			**205**

Tours

Short tour

No. of students	Places of visit	Period
II B Sc (Ag) 30 boys + 32 girls	TNAU college campuses, Regional Research Stations and ICAR stations like Central Tobacco Station & Sugarcane Breeding Institute, Coimbatore	20 10.99 to 6.2.2000

RAWE (Rural Agricultural Work Experience)

For the course AEX 201 (0+9) Village Stay Programme 62. II B Sc(Ag) students have stayed in 10 villages spread over in five districts. for three months from 9.11.99 to 3.2.2000

Agro-Industrial Tie-up programme

Groups of five students were assigned to the following Agro-industries are Selva Vinayaka Coconut Fibres, Noyyal Karur District, Tari hi-tech nursery, Marunkulam, Thanjavur, Krishna oil mills, Palakkarai Trichy, Bio fertilizer production unit, Trichy, Seed processing unit, Kattur, Tiruchirappalli, Central IPM Centre, Kajamalai, Tiruchirappalli, Vallimurugan Sago Factory, Thammampatty, Salem District and T Stanes & Co, Gundur, Trichy

Scholarship

About eighty five percent of the students got financial assistance through scholarship to meet out their educational expenses

AR Junior Fellowship

A total of 18 students got ICAR fellowship to continue their PG programmes

HORTICULTURAL COLLEGE AND RESEARCH INSTITUTE PERIYAKULAM

udent strength

Programme	I[st] Year	IInd Year	IIIrd Year	IVth Year	Total
B Sc (Hort)	59	68	65	64	256
M Sc (Hort)	5	5	-	-	10

urs

India Study Tour

o.of students	Places of Visit	Period
: Final Sc(Hort) 996-97 Batch	1. Bangalore-NDRI, GKVK campus of UAS, IIHR, Indo Americal Hybrid seeds 2. Mysore-Brindavan Garden, Summer Palace garden 3. Delhi-IARI, NBPGR, NSC, Lotus Temple Garden, Moghul garden 4. Ludhiana-PAU 5. Chandigarh-Rose garden, Rock garden, Pinjore garden 6. Solan and Shimla-Y S Parmer University of Hort. & Forestry, CPRI, NCMRT 7. Dehradun-Forest Research Institute 8. Jaipur-Janta Mantar, Rajput Garden 9. Agra-Taj Mahal Garden (Moghul garden)	2 12 99 to 16 12 99

ort tour I

lo.of tudents	Places of Visit	Period
	1. ADAC&RI, Trichy 2. Kudimiyanmalai- Anna Horticultural Farm 3. Vamban-National Pulses Res.Centre 4. AC&RI, Madurai 5. Agrl. Res. Station, Paramakudi	

64 Final B Sc(Hort)	6 State Hort Farm Sundaramudaiyan 7 Private Nurseries Thangachimadam 8 Regional Res Station Aruppukkottai 9 Tuticorin-Gherkin Export Unit. Senna & Dry flowers 10 Export units Spic gardens 11 AC&RI. Killikulam 12 Padmanabamangalam-Max worth orchard 13 Periyakulam-Private orchard 14 Hort Res Station Pechiparai 15 Ambadi Estate 16 Marthandam 17 KANTACO" processing factory 18 State Hort Farm Private orchards and nurseries, Kanyakumari 19 State Hort Farm Courtallam 20 Thenkasi-Private citrus orchards 21 State Hort Farm. Poovani	16 8.99 to 22 8 99

Short Tour II

No.of students	Places of Visit	Period
64 students of III B Sc(Hort)	1 Agricultural Res Station. Aliyarnagar 2 Tamil Nadu Agrl University. Coimbatore 3 Forest College and Res Instt Mettupalayam 4 Agricultural Res Station Bhavanisagar 5 Regional Research Station. Paiyur 6 Hosur Seeds 7 Manjushree Plantations 8 Regional Research Station Vridachalam 9 Vegetable Research Station. Palur 10 Anbil Dharmalinbgam Agrl College and Research Institute. Trichy 11 Sugarcane Research Station. Sirugamani	2.12.99 to 16.12.99

RAWE (Rural Agricultural Work Experience)

The IV B Sc(Hort) students attended Village Stay Programme (0+9) for a period of one month from 22nd September 1999

Group Name	Places
Aduthurai	Tanjore
Salem	Salem
Natham	Dindigul
Thondamuthur	Coimbatore
Hosur	Krishnagiri

Dharmapuri	Dharmapuri
Vadippatti	Madurai
Pattukkottai	Tanjore
Tiruchengodu	Namakal
Palani	Palani
Srivilliputhur	Srivilliputhur
Ottanchatram	Dindigul
Mahathanapuram	Karur
Thoppampatti	Palani
Cumbam	Theni

Scholarships

Scholarship (Different types of scholarship) amount sanctioned to the students of Horticultural College and Research Institute, Periyakulam

S.No.	Name of scholarship	No. of students availed scholarship	Total amount
1	Andhra Pradesh State Scholarship	1	11685 00
2	National Council of Educational Research and Training – talent scholarship	1	5600 00
3	GOI-SC/ST scholarship	1	5000 00
4	BC/MBC/DNC scholarship	180	475634 00
5	National Merit scholarship	2	10080 00
6	Chief Minister Award	4	13500 00
7	SC/ST Post Metric scholarship	73	324582 00
8	SC/ST Loan scholarship	32	96000 00
	Total		**942081.00**

NSS (National Social Service)

- Tree planting and beautification of college campuses
- Cleaning Periyakulam Govt Hospital premises
- Organising "Blood Donars Club" and testing students blood groups
- "AIDS Awareness" programme
- Conducted a special NSS camp of G.Kallupatti from 24.3.2000 to 2.4.2000 and involved cleaning the temple premises, organising kitchen gardens, demonstrations programme, village road rectification, planting tree, Environmental Awareness Programme, AIDS Awareness, Special training for women on Post-harvest technology of Horticultural crops, Mushroom training, Horticultural technology discussion, National Integration and Religious Harmony Procession, Soil testing camp, Free Veterinary Medical camp and Free Eye camp.

FOREST COLLEGE AND RESEARCH INSTITUTE METTUPALAYAM

Students strength

Programme	I[st] Year	IInd Year	IIIrd Year	IVth Year	Total
B Sc(Fores)	14	18	18	16	66
M Sc(Fores)	10	9	-	-	19
Ph D(Fores)	5	4	4	-	13
		Total			98

Tour

Year	No of Students	Duration	Place Visited
First Year Study Tour - I	19 (17 +2)	7 days (26 08 99 to 01 09 99)	Salem,Harur, Ranipet, Neyveli Pitchavaram TAFCORN Arimalam, Kodaikanal
Second year Study Tour - III	18(16+2)	12 days (06 12 1999 to 12 12 1999)	Salem,Harur, Ranipet, Neyveli, Pitchavaram, TAFCORN Arimalam, Kodaikanal
		7 days (18 03 2000 to 25 03 2000)	Kannivadi, Thekkady, Suruli, Srivilliputhur, Coutrallum, Kalakkadu, Kannikumari, Tiruchendur, Keeriparai, Pechiparai, Rameswaram
Final Year	16 (Boys)	20 days (25 02 2000 to 15 03 2000)	All India Tour

Forest Stay Programme

Year	No.of Students	Name of Divisions	Duration
Final Year In 4 batches	18 (16&2)	Srivilliputur,Coimbatore, Harur Thirupathur, HC&RI Periyakulam, RRS. Vridhachalam, ARS. Paiyur, ARS. Virinjipuram	Forest Stay Programme 14 12 1999 to 26.12.1999 Agroforestry 28 02 2000 to 13.03.2000

Scholarships

Sources of Scholarship	Amount	No.of Students availed the Scholarship
ICAR Scholarship	1,89,532	04
SC/St Loan	73,500	11
Hr Edn Loan	4,000	01
Prize Money Scholarship (Chief Minister Award)	1,500	01
National Merit Scholarship	3,120	01
SC/ST Scholarship	49,595	10
BC/MBC/DNC Scholarship	7,963	05
TNAU Merit Scholarship	14,000	04
Total	**3,43,210**	**37**

NSS (National Social Service)

Total NSS volunteers 32 (26 boys and 6 girls)

AGRICULTURAL ENGINEERING COLLEGE AND RESEARCH INSTITUTE, KUMULUR

Students strength

Programme	Ist Year	IInd Year	IIIrd Year	IVth Year	Total
B.E(Ag)	31	38	32	30	131

RAWE Programme

Industrial Training Programme

Industries or organisations which offered the training are The Chief Engineer, Agrl. Engineering Department (AED) Chennai, Aavin (Dairy Unit), Chennai, The South India Flour mill (P) Ltd., Chennai, MB & Co, Wall wood plantations, Coonore, Bhagwati Foods (P) Ltd., West Bengal, Central Soil and Water Conservation Research and Training Institute, Ooty, Aavin Daily, Salem, S.G.Jeyaraj Nadar & Sons, TAFE dealer, Tirunelveli, Southern Region Farm Machinery Training & Testing Institute, Ananthapur, Andra Pradesh, Periyar District Co-op Milk producers Union, Erode, Madurai Dairy (Aavin), Madurai, Institute of Remote Sensing, Anna University, Chennai, Stanes Motors (Southern Indian Ltd.), Coimbatore, Raman & Raman Ltd., Mahendra Tractors dealer, Trichy, Agrl. Engineering Dept., Tirunelveli Dist., Aavin Kanyakumain Dairy Unit, Nagercoil and Regional Coffee Research Station, Kodaikanal.

Village stay programme

Class	Place of programme	No. of days
Final B E(Ag)	Thottiampatti - Watershed area of Thogamalai area block of Karur district	90 days

Educational tours

All India tour

Class	Places to visit	Period
Final B E(Ag)	Aspee Sprayer and Renewable Energy Centre, Mumbai WTC Agri Engineeering Dept Indian Agri Statistics Research Institute, National Centre for Medium Range Weather Forecasting, New Delhi Central Soil and Water Conservation Research and Training Institute, HMT Tractors, Chandigargh Stainless Steel Products (SSP) Ltd , Faridabad	14.2.2000 to 2.3.2000

Short tour

Class	Places of work	Period
Short tour I II B E(Ag)	Kaveri Sugars Pettavaithalai, Trichy College of Agri Engg Workshops TNAU Coimbatore, Flow Tech Power Irrigation Equipments, Coimbatore, Sakthi Soyas Pollachi, Central Soil and Water Conservation Research and Training Institute, Udhagamandalam, Chennai Bottling Company Ltd , Modern Food Industries (India) Ltd , Chennai, TAFE ltd , Chengalpet	7 days (26.1.2001 to 2.2.2000)
Short tour II II BE(Ag)	V M Thevar Plough Works, Melur Nataraj Oil Mills, Uthunjudi, AC&RI, AAVIN Madurai Dairy, Madurai, Madurai Kamaraj University, Nagamalai, Fishery Research Station, Mandapam SPIC Thermal Power Station Tuticorin, Bio-gas plant Vivekanandha Kendra, Kanyakumari	8 days (2.2.1999 to 9.2.1999)

COLLEGE OF AGRICULTURAL ENGINEERING COIMBATORE

Courses offered

Degree programme	Agricultural Processing	Farm Machinery	Bio-Energy	Soil and Water Conserevation	Zonal Research Centre
B Sc(Agri)	1	2	-	1	1
B Sc(Forestry)	1	-	-		-
B Tech(FPE)	19	6	4	4	-
M E(Ag)	12	12	12	12	2
Ph D	8	8	8	8	-

B Tech (Food Process Engineering) degree programme is offered under semester system with a credit load of 159 hours in eight semesters Hands-on training and industry exposure are the major highlights of this programme

Students strength

The department wise students strength during the year 1999-2000 is detailed below

Programme	Discipline	Department	No. of Students
U G.	I Year B.Tech (FPE)	-	18
	II Year B Tech (FPE)	-	20
Masters Degree	I M.E(Ag)	Agricultural Processing	6
		Soil & Water Conservation	5
		Farm Machinery	5
	II M.E(Ag)	Bio-Energy	2
		Agricultural Processing	
		Soil & Water Conservation	2
Ph.D.Degree	I Year	Agricultural Processing	2
		Soil & Water Conservation	2
	II Year	Agricultural Processing	4
		Soil & Water Conservation	4
	III Year	Bio-Energy	3
		Farm Machinery	2
		Agricultural Processing	2
		Soil & Water Conservation	1

Tours

Short tour	Places of visit	Purpose of visit
Students II B Tech	RRs Paiyur, SRS Cuddalore, Madras Veterinary College, Chennai Annamalai University, Chidambaram	To study the cropping pattern are to study the cultivation of crops, cropping pattern, different post harvest technologies, food processing techniques and research activities

Scholarships

Programme	Course	No. of Students	Name of Scholarship
U G	I Year B Tech (FPE)	1	SC Scholarship
		1	SC Loan
		3	BC Scholarship
	II Year B Tech (FPE)	2	SC Scholarship
		3	SC Loan
		4	BC Scholarship
PG	I Year ME(Ag)	5	SC Scholarship
		5	SC Loan
	II Year ME(Ag)	3	ICAR Fellowship
		1	Sago Serve Scholarship
Ph D	I Year	1	UGC-JRF
		2	CSIR Fellowship
	II Year	3	
	III Year	3	

NSS (National Social Service)

NSS volunteers were involved in activities like Blood donation camp, Hepatitis B vaccination camp, donation collection of Rs 23,765/- for the relief of Kargil soldiers, AIDS awareness compaign, Independence Day celebrations, Massive campus tree planting programme, Republic Day celebrations and Special camp.

HOME SCIENCE COLLEGE AND RESEARCH INSTITUTE MADURAI

Students strength

Degree	Ist Year	IInd Year	IIIrd Year
Ph D	4	6	5
M Sc	12	11	-
B Sc	20	18	14

RHWE **(Rural Home science Work Experience)**

Class	Place of programme	No. of days
Final B Sc (Home Science)	Thirumoghur a) *Conducting socio economic and dietary surveys* b) Conducting exhibitions on health, hygiene, nutrition, childcare, post harvest handling of perishable and non perishable foods, food processing and developing low cost nutritious supplementary foods for various age groups c) Distributing related literature to the villagers	15 days (30 3 2000 - 13 4 2000)

Scholarship

Scholarship	B.Sc	M.Sc	Ph.D
TNAU merit	3	2	5
SC	9	2	3
BC	15	-	-
DNC	2	-	-
DNT	2	-	-

UNIVERSITY LIBRARY

Tamil Nadu Agricultural University has its own central library located in the main campus. The Library is a information resource centre for the Under Graduate, Post Graduate students, Doctoral Research Scholars, Teachers, Researchers and Scientists of the Main Campus and its constituent Colleges and Research stations in the state The Library has a good collection of over 1.55 Lakhs books and publications comprising reference books, monographs, subject books, textbooks, back volumes of periodicals etc

The library has been frequently utilised by the Post-Graduates and Teachers and scientists of TNAU and also, Bharathiar University, Avinashilingam Deemed University of Higher Education for Women, Colleges and Research Institutes in and around Coimbatore city. The Library also caters to the information needs of the scientists of Sugarcane Breeding Institute, Central Institute for Cotton Research, Botanical Survey of India, Institute for Forest Genetics and Tree Breeding and to the

Post-Graduates of Annamalai University, Calicut University and colleges of Nilgiris, Erode, Dindigul and Tiruchirapalli districts.

Under the AHRDP sponsorsed by the World Bank, Internet-cum E-mail facility has been created for the Research Scholars to interact with experts and IARC elsewhere.

The Computer Unit with 20 computers was inaugurated in the University Library on 13.1.2000 by **Prof. Dr.S.Kannaiyan,** Vice-Chancellor, Tamil Nadu Agricultural University, Coimbatore. Computers with peripherals are kept for the students use. Remaining 8 are kept to under take the automation of library, house keeping activities like acquisition of books & publications, periodical / serial control, documents circulation control, online public Access Catalogue and Information Retrieval and Dissemination.

RESOURCES ACQUISITION PROGRAMME

PERIODICALS (Micro documents)

Five titles of periodicals have been included during the year to the list of 380 titles of current periodicals. About 144 renewal orders have been made to subscribe periodicals (both Foreign & Indian origin). Totally 2360 issues of current periodicals have been received and displayed for use. Thirteen Form had been prepared. 112 drafts were obtained and 205 payments were made to subscribe the periodicals and the particulars were entered in the kardex for future reference at the cost of 14.50 lakhs.

BOOKS (Macro documents)

Under the World Bank AHRDP, an amount of Rs.1.00 Lakh was spent for the purchase of 180 copies of Text books with 140 titles for various disciplines. An amount of Rs.22,000/- was allocated for the subscription of Magazines and this amount was utilized to subscribe 27 Indian journals. A total of 627 books were also purchased under regular budget for a sum of Rs.5,45,514/-.

Totally 3065 documents (639 books, 71 Gratis books,1804 Back volumes, 58 serial publications and 493 theses) were included in the stock of the Library.

The University Library received 250 books and publications as gifts from Indian Council of Agricultural Research (ICAR), New Delhi, Asian Vegetable Research and Development Centre (AVRDC), Taiwan, Food and Fertilizer Technology Centre for the Asian & Pacific Region, (FFTC), Taiwan, International Centre for Agricultural Research in the Dry Areas (ICARDA), Syria, International Crop Research Institute for the Semi-Arid Tropics (ICRISAT), India and International Rice Research Institute (IRRI), Philippines and also from Shri. Setti Santharam,U.S.A. & 2. Sri. Partha Das Gupta.

New Crop varieties release

Hon'ble Minister for Agricultural inaugurates farmers day exhibition

JSER SERVICE

.ending service

The library was kept open for 341 days during 1999-2000. The gate register had ·5 548 entries of visitors to the Library. During the year 6,88,221 documents have been ·tilised by the users, 33,909 documents were issued on loan for home reading, 13,213 ·ocuments were received back after use, 23,632 over due entries were registered, 1050 ·ew membership cards were prepared and distributed to P.G & Ph D Students and Staff ·lembers of the University. Permission was granted to 3,999 users belonging to other ·stitutions of *Tamilnadu and elsewhere to use the library*

·udio visual unit

The following audio visual materials have been procured and kept in the Library ·r the use of research scholars, scientists and student community

Audio-visual materials like Television, Video Cassette player, Audio ·eadphones have been purchased under AHRD project, besides CD-ROM disc 17, ·oppy Discs : 20, Video Cassettes : 28, Micro film strips : 17 and Microfilm 103 have ·so be procured.

nder Graduate library

The Under Graduate Library is kept open for use from 4 00 PM to 8 00 PM on all ·orking days for the use of undergraduate students. A total of 10,141 students have ·sited the library, and 43,892 books were used 9,786 books were issued on loan for ·ome reading.

·ffice administration and maintenance

The Library Committee met twice during the year and made useful suggestions ·r *the collection, development and improvements of the facilities for the users. The* ·udget allocation to the Library was utilised as detailed below :

1. Books purchased	:	Rs. 5,45,514.00
2. Journals purchased	:	Rs. 14,49,868.00
3. Binding	:	Rs. 1,15,585.00
4. Stationery & other materials	:	Rs. 21,267.00
5. Weekly Wages	:	Rs. 2,66,166.00

·vent for the year

The University Library participated the 'Agrofest 99' conducted at Chennai from ·th to 12th December 99 and displayed the TNAU Publications.

CHAPTER IV

RESEARCH

Research is one of the triple functions of TNAU The major findings of research carried out in TNAU are highlighted in this Chapter, cropwise under crop improvement crop management and crop protection The findings of the researches conducted in Water Technology Centre Centre for Plant Molecular Biology, Bio-Chemistry, Agrl Microbiology Horticulture, Sericulture and Centre for Agrl & Rural Development Studies and Agrl Engineering College are also presented

AGRICULTURE

RICE

CROP IMPROVEMENT

For adoption

ADT 44: (Selection from OR 1128-7-S1(IR 56/OR 142-99) A medium tall plant matures in 145 150 days It recorded an average grain yield of 6214 kg/ha with 4 9 and 13 0% increase over CR 1009 and ADT 40 respectively The grains are short bold, white kernelled with high head rice recovery (61 5%) and very good linear elongation (1 68 times) Resistant to GLH, blast and shows field resistance to stemborer, brown spot and leaf folder

Promising cultures

Short duration rices *viz* cultures like **CB 9703** (Imp. White ponni / TNAU 851979 / IR 72). **CB 97035** (Imp White ponni / TNAU 851979 / IR 64) **AD95010** (IR50 / ADT 37) **AS95137** (IR50/ASD8). **AS 93182** (AS 28883) / IRAT 264) and **SSRC 91216** (IET 6238 x IR 36) were identified as promising cultures with the yield potential of more than 5 t/ha They are all in advance stage of testing

A 94010 (ADT 38 / CO 45). **AD 94016** (CO 95 / ASD 15) **AS 93165** (V20A / ASD 17). **ACK 198** (IR 20 / AS 327133) and a cold tolerant culture **IR 4595-94-1-13** (Pokkali / IR 2031 - 114 / IR 2005-48-2) were identified as promising medium duration rice cultures, with a potential to yield more than 5.4 t/ha They are in final stage of evaluation A medium duration rice hybrid **TNRH 21** (IR 580254 / CBT 21 R) with a potential to yield 6 5 t/ha is also under MLT testing

CROP MANAGEMENT

For adoption

Rice, seedling throwing method saved 50% labour compared to line planting. The yields were higher than the random planting method (farmers' practice), but marginally lower than line planting. Use of 20% more seedlings than line planting is required to ensure plant population and maintain yield.

Application of poultry manure @ 5 t ha^{-1} + 4 times the recommended dose of bio-fertilizers + groundnut oil cake @ 100 kg ha^{-1} recorded significantly higher grain yield in Kuruvai (6244 kg ha^{-1}) and yield on par duringThaladi (6267 kg ha^{-1})

Application of FYM (12.5 t ha^{-1}), *Azospirillum* (soil) + zinc sulphate (25 kg ha^{-1}) as basal and top dressing 25% N on 25, 45 and 60th DAT and 50% K on 35th and 55th DAT gave good yield in rice.

Hybrid seed production : CMS line (IR 58025A and IR 62829 A) commenced 50% flowering 3 to 4 days later in rabi season, compared with kharif season but the maintainers (IR58025B and IR682829A) (B) and restorers (R) (C20R and IR 66R) *required 1 or 2 days more in rabi season for 50% flowering. Therefore, staggered* sowings have to be followed for hybrid rice seed production in kharif and rabi seasons to get synchronised flowering.

The seed set and seed yield were maximum in 10x10 cm spacing but the seed quality parameters were significantly lower than other spacings in CORH 2. Seed storage in humid coastal and deltaic areas can be overcome by reducing the moisture to 10-11 % then treating with halogen mixture ($CaCl_2$ + Ca CO_3 at 1:1 ratio) and packed in polylined gunny bags. Seeds stored in this manner recorded more than 80 per cent germination even after 15 months in ADT 38, CO 43 and CO 46 rice varieties. The cost of seed treatment and container works out to Re 1 kg^{-1} of seed stored.

Maximizing rice yield under organic farming situations (Imp white Ponni) : revealed that application of organic + inorganic treatment recorded the highest grain yield of 4.4 t ha^{-1}. The corresponding B:C ratio was 2.88. The treatment organic manure alone registered 3.5 t ha^{-1} with the B:C ratio of 2.34.

The pooled results of Permanent Manurial Experiment on 38th and 39th rice crops showed that plot received FYM / green manure / urban compost, besides N, P and K at the recommended levels, gave higher yield (6.1 t ha^{-1}).

Azospirillum and *Phosphobacteria* mixture (50:50) performed very well in the field conditions. Ferrogypsum a by-product of effluent treatment plant of Titanium Industry of M/s Kilburn Chemicals Ltd., Thoothukudi contains gypsum (52.63) and Iron (10.24% as

Fe_2O_3) and it was as effective as agricultural gypsum in the reclamation of alkali soil when used on the basis of equivalent amount of calcium in both materials.

CROP PROTECTION

For adoption

PGPR strains on rice sheath blight disease

Pseudomonas flourescens strains either individually or as strain mixture against sheath blight disease revealed that the strain mixtures (PF 1 + FP 1) applied through seed treatment (10 g/kg) + root dipping (20 g/lit) + Foliar spray (0.2%) at 30 DAP + soil application (2.5 kg/ha) at 30 DAP significantly reduced the disease incidence and increased the yield.

Trichogramma spp. and *Bacillus thuringiensis* against rice pests :

Release of *Trichogramma japonicum* and *T. chilonis* @ 1,00,000/ha followed by spraying of *B.t.* @ 1 kg/ha when stemborer and leaf folder populations crossed the ETL effectively controlled these pests and increased the yield.

SORGHUM

CROP IMPROVEMENT

For adoption

K 11 (K7 x 6522): A fodder-cum-grain sorghum matures in 110 to 115 days. It recorded a higher mean dry fodder yield of 10.36 tonnes/ha and mean grain yield of 1560 kg/ha which is 10.3 and 7.6 per cent increase over the check K 10 respectively. It possesses high yield potential of 33.4 tonnes/ha of dry fodder and (4100kg/ha) of grains; fodder has high protein content (7.44 % as Green) and (4.44 % as Dry) and low HCN content of 50 ppm; Grains have good taste, flavour, texture and over all acceptability; it is moderately tolerant to ear head bug and leaf spot and downy mildew diseases; suitable for cultivation in rainfed, vertisol tracts of southern districts of Tamil Nadu.

Promising cultures

Two promising cultures viz. **TNS 296** (CO25 x SPV 942) and **TNS 587** (SPV 544 x SPV 472) and one high yielding hybrid **TNSH 301**(2077A x SPV1234) are in ART. Three other cultures viz. **TNS 587**(SPV 544 x SPV 472), **TNS 586** (SPV 964 x CO26) and **TNS 340** (SPV 462 x SPV 946) are in MLT.

CROP MANAGEMENT

For adoption

Sorghum (rainfed) : The thermo tolerant Azospirillum strain AZt 11 when treated with sorghum seed enhanced the yield by 11.2% over uninoculated control.

Application of N at 90 kg ha^{-1} in 3 splits during basal 15and 30 DAS is ideal for sorghum production.

CROP PROTECTION

For adoption

Control of sorghum shoot fly (*Atherigona soccata*)

Soil application of phorate 10G @ 40 kg/ha at the time of sowing or seed treatment with imidacloprid 70 WS @ 10 g/kg of seeds was highly effective in reducing the shoot fly damage and increasing the grain yield.

Management of the lesion nematode

Seed treatment with *Pseudomonas fluorescens* @ 10 g/kg reduced parasitization by the root lesion nematode (*Pratylenchus zeae)* on sorghum and maize and increased the yield significantly. In soil population of the lesion nematode in sorghum and maize was 58.24 and 61.65% respectively, 90 days after sowing. The treatment increased the yield by 98.75% in sorghum and 68.79% in maize.

Management of stored product pest *(Sitophilus oryzae)*

TNAU Neem Oil formulations *viz*., TNAU NO 60 EC(A) 1%, TNAU 60 EC(C)1% and TNAU NO PO 60 EC(C)1% and palmarosa oil @ 1% effectively protected the sorghum grains from the damage caused by *Sitophilus oryzae*.

CUMBU

CROP IMPROVEMENT

Promising cultures

The hybrids **TNBH 5635**, **TNBH 7526** and composites **UCC 23** and **ICMS 8330** are under ART. The hybrid TNBH 5635, and composite **UCC 23** performed well in farmer's field.

CROP MANAGEMENT

For adoption

Three split application of nitrogen at 70 kg ha^{-1} as 25:50:25 per cent (or) 50:25:25 per cent at basal, 15 DAS and 30 DAS enhanced the grain yield of Pearl millet (CO 7).

MAIZE

CROP IMPROVEMENT

Promising cultures

Two single cross maize hybrids i.e **UMH 16** (UMI 810 x UMI 112) and **UMH 42** (UMI 90xUMI 285) one three way cross hybrid **UMH 26** (UMI 90 x UMI 51) x UMI 424) and one composite **UMC 9** are under ART.

CROP MANAGEMENT

For adoption

75% of the recommended level of P applied through rock phosphate enriched with FYM registered higher grain yield in maize, intercrop soybean and succeeding blackgram. Intercropping system of maize + Cowpea at 2:1 ratio (Paired row) along with pre-emergence application of Metolachlor 1.25 kg a.i. ha^{-1} and one hand weeding increased the grain yield of maize, smothered weeds and registered higher economic ratio.

RAGI

CROP IMPROVEMENT

Promising cultures

TNAU 568 and **TNAU 915** and **TNAU 903**, **TNAU 915**, **TNAU 910** are under final test of evaluation.

The short duration high yielding ragi culture **DPI 2011** (MS 2863 x MS 2765) and the long duration culture **DPI 2192** (CO 9 x CO 7) are being evaluated under ART. Two long duration high yielding cultures **DPI 2503** (BM 107-7-2) and **DPI 2504** (SRS 2) are being evaluated in Multi Location Trials.

SAMAI

CROP IMPROVEMENT

For adoption

Paiyur 2 (selection from PM 295): A short duration high yielding variety matures in 80-85 days. It recorded an average grain yield of 744 kg/ha. It is 9.4 and 23.2 per cent yield increase over CO 3 and Paiyur 1 respectively. It contains 8.9 % protein with acceptable quality of the grain.

Promising cultures

Two high yielding cultures viz., **DPI 1866** and **DPI 2386** are under ART.

CHAPTER IV

RESEARCH

Research is one of the triple functions of TNAU. The major findings of research carried out in TNAU are highlighted in this Chapter, cropwise under crop improvement crop management and crop protection. The findings of the researches conducted in Water Technology Centre, Centre for Plant Molecular Biology, Bio-Chemistry, Agrl. Microbiology, Horticulture, Sericulture and Centre for Agrl. & Rural Development Studies and Agrl. Engineering College are also presented.

AGRICULTURE

RICE

CROP IMPROVEMENT

For adoption

ADT 44: (Selection from OR 1128-7-S1(IR 56/OR 142-99). A medium tall plant matures in 145-150 days. It recorded an average grain yield of 6214 kg/ha with 4.9 and 13.0% increase over CR 1009 and ADT 40 respectively. The grains are short bold, white kernelled with high head rice recovery (61.5%) and very good linear elongation (1.68 times). Resistant to GLH, blast and shows field resistance to stemborer, brown spot and leaf folder.

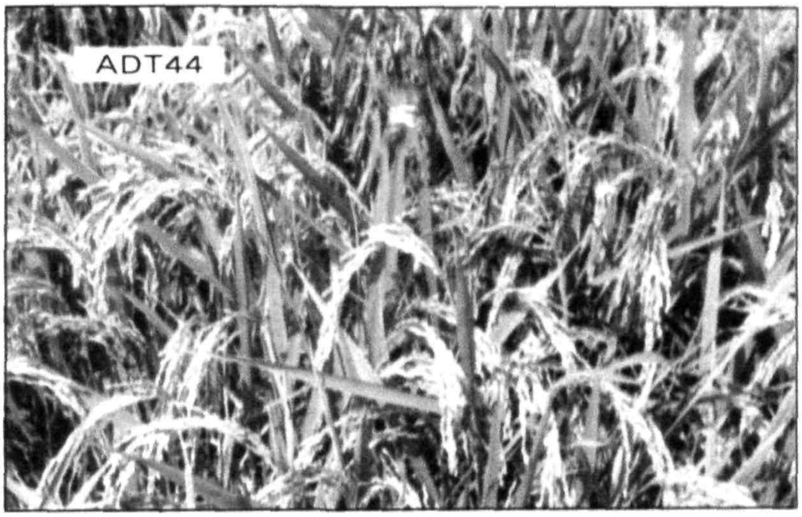
Promising cultures

Short duration rices *viz.*, cultures like **CB 9703** (Imp. White ponni / TNAU 851979 / IR 72), **CB 97035** (Imp. White ponni / TNAU 851979 / IR 64) **AD95010** (IR50 / ADT 37) **AS95137** (IR50/ASD8), **AS 93182** (AS 28883) / IRAT 264) and **SSRC 91216** (IET 6238 x IR 36) were identified as promising cultures with the yield potential of more than 5 t/ha. They are all in advance stage of testing.

A 94010 (ADT 38 / CO 45), **AD 94016** (CO 95 / ASD 15) **AS 93165** (V20A / ASD 17), **ACK 198** (IR 20 / AS 327133) and a cold tolerant culture **IR 4595-94-1-13** (Pokkali / IR 2031 – 114 / IR 2005-48-2) were identified as promising medium duration rice cultures, with a potential to yield more than 5.4 t/ha. They are in final stage of evaluation. A medium duration rice hybrid **TNRH 21** (IR 580254 / CBT 21 R) with a potential to yield 6.5 t/ha is also under MLT testing.

Samai - Paiyur 2

Blackgram - Vamban 3



Rice - ADT44

Fodder cum grain Sorghum K11

KUDIRAIVALLI

CROP IMPROVEMENT

For adoption

The promising cultures viz. **TNAU 63**, **TNAU 72** and **TNAU 80** are under ART.

PULSES

REDGRAM

CROP IMPROVEMENT

Promising cultures

CORG 9407 (C05 / KPL 83024) (an extra early culture) **CORG 9701** (selection from PB 9825), **URG 17** (long duration culture) and **URG 42** a short duration (SMR) cultures are in advanced stage of testing.

CROP MANAGEMENT

For adoption

Combined inoculation of *Rhizobium* (CC1) and *Phosphobacteria* with 50 per cent of recommended dose of fertilizer along with 5 t ha^{-1} of compost has enhanced the plant growth and grain yield (26.9 per cent over control)

CROP PROTECTION

For adoption

IPM on Pod Borer Complex

The pod borer and pod fly grain damages were minimum in the IPM plot (early sowing, bird perches @ 50/ha, *Helicoverpa* pheromone traps @ 12/ha, Dichlorvos spray @ 500 ml/ha, NSKE spray (5%), *Helicoverpa* NPV spray 3 x 10^{12} POB/ha (500 LE/ha), as compared to other practices. The yield was also higher in IPM plot than other plots.

Management of *Heterodera cajani*

Soil application of *Pseudomonas fluorescens* at 2.5 kg/ha at the time of sowing significantly reduced *Heterodera cajani* population in roots by 24.59% at 45 days after sowing and 30.72% at crop maturity in soil and also increased the grain yield (35.78%). The cost of treatment was Rs.200/ha and gave an additional income of Rs.3400/ha.

BLACK GRAM

CROP IMPROVEMENT

For adoption

Vamban 3 (LBG 402 / LBG 17): A high yielding yellow mosaic resistant variety matures in 65-70 days and recorded an average yield of 775 and 826 kg/ha in rainfed and irrigated conditions respectively. It is 14.8 and 15.4 per cent increase over Vamban 1, 16.9 and 9.4 per cent over Vamban 2 and 6.3 and 15.0 per cent over CO 5 in rainfed and irrigated conditions respectively.

Promising cultures

COBG 593 (COBG 10 / DU 2) : It matures in 60 – 65 days with a yield potential of 841 kg/ha as against the yield of 717 kg/ha recorded by CO 5. The yield increase is 17.2 %. It is being evaluated under ART and the Front line demonstrations.

COBG 630 (selection from CO 2) **VRG 23** (DUI / ADT 3) (YMD Resis) **UBG 55** (CO 4 / PDU 102) (YMD resis) **ADB 2003** (London 1/ADT 5) **ADB 2045** (ADT 3 / AB 863) (rice fellow cultures) and **UBG 52** (YMD Res.) promising cultures are in advance stage of testing.

CROP MANAGEMENT

For adoption

Combined Inoculation of *Rhizobium* and antagonistic bacteria (AB3) enhanced the grain yield from 2.85 to 8.65 per cent.

Application of recommended dose of NP (25:50 kg ha^{-1}) + 2% DAP spray +2 kg phosphobacteria + ZnSO4 0.5% FeSO4 1% spray at 30 and 45 DAS was found to give increased yield in blackgram.

Application of 25:50 kg NP ha^{-1}+2% DAP spray + 2 kg PB + 0.5% ZnSO4 + 1% FeSO4 spray found to enhance the grain yield of both blackgram(BG) and greengram(GG).

Promising Micro cultures

Inoculation of *Rhizobium* and sulphur bacterium enhanced the plant growth; nodule biomass and grain yield significantly in blackgram

CROP PROTECTION

IPM of insect pests

In the IPM plots, reduced pod borer damage (4.5%) and higher grain yield (667.2 kg/ha) were recorded.

GREEN GRAM

CROP IMPROVEMENT

Promising cultures

VGG 9 (VGG 4 / MH 309): It is a high yielding, yellow mosaic tolerant greengram recorded an average yield of 637 kg/ha. It is 13.3 and 14.8 per cent increased seed yield over Vamban 1 and CO 6 respectively under MLT.

CROP MANAGEMENT

For adoption

The mean yield increased from 887 kg ha^{-1} (in control) to 1026 kg ha^{-1} due to foliar spray of salicylic acid @ 50 g / 500 lit ha^{-1} on 30 and 45 DAS under irrigated condition.

The performance of CO4 greengram was better for getting higher yield than VBN1 for Adippattam season. Application of 150% recommended NP (81kg urea + 469 kg of super) + 25 kg K_2O ha^{-1} 2% DAP spray given at the time of first flowering and 15 days after first spray, found to give better yield and net return under irrigated conditions of Cauvery Delta region.

CROP PROTECTION

For adoption

Management of *Heterodera cajani*

Soil application of *Pseudomonas fluorescens* at 2.5 kg/ha at the time of sowing significantly reduced *Heterodera cajani* population in roots by 15.76% at 45 days after sowing and 30.53% at crop maturity in soil and also increased the grain yield (30.27%) at Coimbatore. The cost of treatment was Rs.200/ha and gave an additional income of Rs.3,170/ha.

OIL SEEDS

GROUNDNUT

CROP IMPROVEMENT

Promising cultures

The bunch cultures viz., **VG 9711** (CG 26 / ICGS 44), **VG 9526** (ICGS 44 / JL 24 / ACR 2) **TNAU 269** (TMV 10 / IGGS 82) **TNAU 325** (Selection from Pollachi Red) **TNAU 281** (CO 2 / ICGS 86010 / CO 2) / (CVG 199 / ICGS 50) **BS 9702** (CS 39 / ICGV 8634) **BS 9706** (IGG 1697 / ICG 4790) and a semi spreading culture **TVG 8803** (R 33-1 / CG 2271) were found to be highly promising. They are all in advance stage of evaluation.

CROP MANAGEMENT

For adoption

Use of polyethylene films as mulch for irrigated groundnut under broad bed and furrow system of sowing is recommended. FYM and all other recommended fertilizers should be applied as basal. Front line demonstrations conducted in 7 farmers' holdings have shown 36.6% higher yield.

The combined nutrient spray, (DAP 2.5 kg ha^{-1} + Ammonium sulphate 1 kg ha^{-1} + Borax 0.5 kg ha^{-1} + NAA 40 ppm on 25 and 35 DAS), foliar spray of NAA @ 40 ppm on 45 and 55 DAS gave higher yield in irrigated groundnut.

Sowing of groundnut in contour either by country plough or by tractor, followed by ridging three weeks after sowing gave good yield under rainfed groundnut under alfisols.

Combined inoculation of slow growing Bradyrhizobium strain (Tt-99) and the plant growth promoting *Rhizobacteria Pseudomonas* enhanced the pod yield of groundnut.

Sowing along the contour and ridging 3 weeks after sowing (WAS) had given higher pod yield ranging from 8 to 13 per cent. The additional cost for sowing in contour and ridging was Rs.750/- (country plough 7.5 @ Rs.100 per plough). The additional return ranged from Rs.2140 and Rs.3500.

Foliar application of Brassinolides (BR) 0.5 ppm at 40 DAS was significantly superior, to unsprayed control. The yield increase in BR treated plants was found to be associated with increased LAI, photosynthetic pigments, increased soluble protein content and enhanced activity of enzyme nitrate reductase over control.

CROP PROTECTION

For adoption

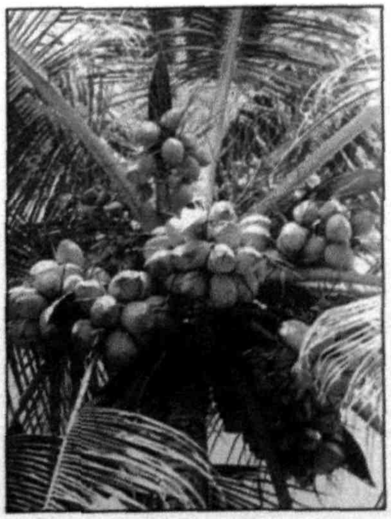
Imidacloprid 200 SL against leafhopper and leafminer

Imidacloprid 200 SL at 100 ml/ha sprayed twice, at 30 and 51 DAS was effective against leafhopper and resulted in increased pod yield. Imidacloprid 200 SL at 150 ml/ha foliar spray applied twice, 35 and 56 DAS reduced the leaf miner larval population significantly and increased pod yield. Residue of imidacloprid was at below detectable limit in the haulm, shell, kernel and oil at harvest even at a higher dose of 400 ml/ha.

***Bacillus thuringiensis* var. *galleriae* (B.t.g.) on pod borer**

The order of efficacy of treatments in recording less number of larvae, less leaf damage and higher pod yield was in the order of Chlorpyriphos > B.t.g. 1 lit/ha + NPV @

Hybrid Sunflower - TCSH1



Hybrid Cocount - VHC3

1.5 x 10^{12} POB/ha > NPV 1.5 x 10^{12} POB/ha > B.t.g. @ 1.0 lit/ha in the management of *Helicoverpa armigera* and *spodaptera litura*.

SESAME

CROP IMPROVEMENT

Promising cultures

Cultures like **VG 9516** (VS 9003 / TMV 3) **VS 9104** (TMV 3 / VS 345) and **TNAU 120** (TNAU 22 / SI 1525) have recorded yields ranging from 781 to 867 kg/ha and oil content between 50.68 and 52.3 per cent, they are under final testing.

CROP MANAGEMENT

For adoption

Foliar spraying of salicylic acid (100 PPM) @ 50g/500 liters ha^{-1}, at flowering (30 DAS) and capsule filling (50 DAS), stages of sesame enhanced the grain yield by 39.2 per cent over control.

CROP PROTECTION

IPM on the shoot webber-cum-capsule borer

Antigastra catalaunalis population was markedly reduced in IPM M2 module. (Intercropping sesame with blackgram (4:1) seed treatment with *Trichoderma viride* (4 kg/ha) and two foliar sprays of neem seed kernel extract (NSKE) 5 per cent 45 and 65 DAS). Mean number of caterpillars was 2.00 and 3.33 in M2 module on 30 and 60 DAS, besides, registered a maximum seed equivalent (516 kg/ha).

SUNFLOWER

CROP IMPROVEMENT

For adoption

TCSH 1 (CMS 234 A / RHA 272): It is the first sunflower hybrid released from TNAU during January 2000 for general cultivation. It has recorded an overall mean seed yield of 1650 and 1850 kg/ha under rainfed and irrigated situations respectively. This hybrid has higher oil content (39.6%), hull content (21.6%) and found to be tolerant to *Alternaria* leaf spot and rust disease. It matures in 85-90 days.

CROP MANAGEMENT

For adoption

The electrophorograms exhibited differences among KBSH1, sunflower hybrid and it's A, B & R lines and varieties like CO2, CO3 CO4 and Morden. Seeds of KBSH 1 are distinguishable from the varieties by the presence of the peptide bands at Rm value

0.362. Similarly the variety Morden is distinguishable from other genotypes by the presence of a peptide band at Rm value 0.885.

CROP PROTECTION

For adoption

Imidacloprid against leafhopper

Seed treatment with imidacloprid 70WS at 7 g/kg protected the sunflower from leaf hopper upto six weeks after sowing and resulted in increased grain yield. Foliar spray of imidacloprid 200 SL at 100 ml/ha once at 3 weeks after sowing reduced the larval population significantly and the effect persisted for 3 weeks. Significant increase in grain yield was also observed. The residue in seed and oil in the above treatments was below detectable limit even when the chemical was applied at a higher dosage.

COCONUT

CROP IMPROVEMENT

For adoption

VHC 3 (East Coast Tall x Malaysian Orange Dwarf): The hybrid was released during January 2000 for larger cultivation in Tamil Nadu. It recorded a mean yield of 156 nuts/palm/year and copra yield of 25.2 kg/palm/year with an increased nut yield of 10% and 19.7% copra yield over VHC 2. Oil content of VHC 3 is 70%. The estimated oil yield of VHC 3 is 2.55 tonnes/ha as against 2.13 and 1.13 tonnes/ ha in VHC 2 ECT respectively. High nut weight, kernel weight and copra weight are the special features of VHC 3. The hybrid recorded high copra out turn of 162 g/nut as against 146 g in VHC 2. For one tonne of copra VHC 3 requires 6180 nuts, whereas VHC 2 and ECT require 7680 nuts 6675 and respectively.

CROP MANAGEMENT

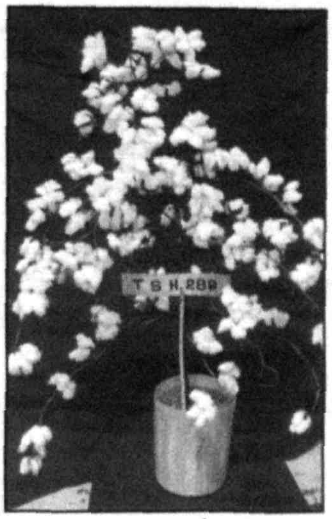
For adoption

Full dose of NPK every year combined with root feeding of nutrient mixture with NAA (40 ppm) given at quarterly interval increased the nut production from 67 (pre treatment) to 125.7 nuts palm^{-1} year^{-1}.

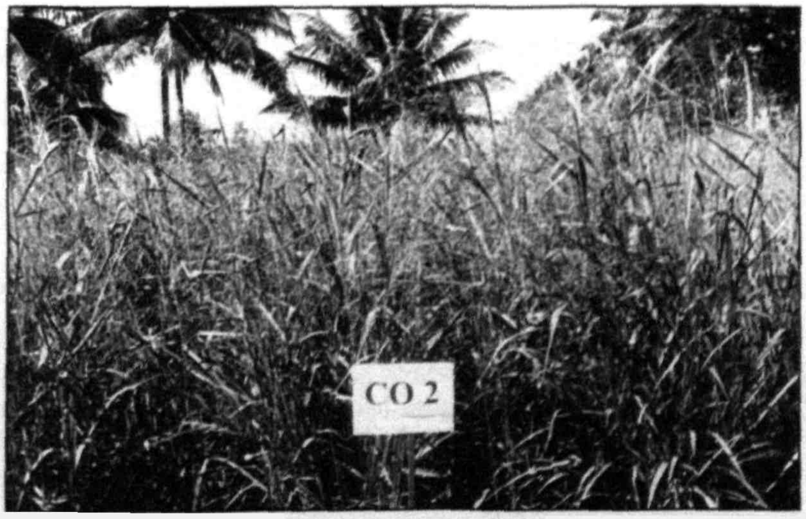
CROP PROTECTION

For adoption

Spraying of dichlorvos 2 ml/lit, and *Bacillus thuringiensis* (1 g/lit), triazophos 5 ml/lit and methyl demeton 4 ml/lit was the most effective in controlling slug caterpillar (***Contheyla rotunda.)*** Root feeding with monocrotophos 15 ml + 15 ml of water is also effective in reducing the slug caterpillar population. The population of predatory pentatomid bug, *Canthecona typealis* was significantly higher in palms treated with TNAU neem oil [C] formulation 30 ml/lit.



Cotton - SVPR3



Guinea grass - CO2

Root feeding with profenofos 50 EC 15 ml + 15 ml water and carbosulfan 25 EC 15 ml+15 ml water reduced the mite population to a maximum of 73 % and 90 % respectively over control and the cost per tree worked out to be Rs.7.20 for both chemicals.

COTTON

CROP IMPROVEMENT

For adoption

SVPR3 (TSH 1288) (LH 900/1301 DD): The variety was released SVPR 3 during the year 2000 for large scale cultivation in rice fallow tracts of Tamil Nadu. It is a short duration (135 days) variety with an average kapas yield of 1300 kg/ha which is 23.8% more over MCU 7. The fibre qualities are on par with MCU 7 and the fibres can be spun to 30 counts. It is tolerant to drought, stem weevil and moderately resistant to leaf hopper and *Alternaria* leafspot and resistant to bacterial blight.

Promising cultures

TCH 1452 a multiple cross derivative recorded the highest mean yield of 1861kg/ha of seed cotton against MCU 5 (1575 kg/ha) and LRA 5166 (1641kg/ha) which is 18.2 and 13.4 per cent increase respectively over MCU 5 and LRA 5166.

TCH 1569 (TCH 1002 / MCU 5/3) has also performed well. It has a ginning potential of 34 %, 2.5% span length of 29.8 mm, and a predicted CSP of 2156 (50's count).

CROP MANAGEMENT

For adoption

Both weed control efficiency and seed cotton yield were the highest with pre-emergence weed control with pendimethalin 1.0 kg ha^{-1}– Hw. Post-emergence weed control either by glyphosphate 2.05 kg ha^{-1}- HW or HW twice, also gave comparable yields in winter cotton.

CROP PROTECTION

For adoption

Seed treatment with imidacloprid 70WS at 7 g/kg protected the crop from aphids, leafhoppers and thrips upto 8 weeks and also resulted in increased seed cotton yield. The additional income for a cotton hybrid crop was Rs.13,150/- and for a cotton variety, it was Rs.12,770/- per ha.

Two rounds of foliar spray of imidacloprid 200 SL at 100 ml/ha reduced the population of aphids, thrips and leafhoppers significantly and persisted for 2 weeks. This treatment also recorded higher seed cotton yield and an extra income of

Rs.9,900/ha. Residue analysis also revealed that it was below the detectable limit in lint, seed and oil.

FORAGE CROPS

CROP IMPROVEMENT

For adoption

Guinea grass

CO2 (GG5) (CO1 x Centenario) : It was released during Januray'2000. This perennial variety comes up well under irrigated as well as rainfed conditions and suitable for multicut. It is a shade tolerant grass and highly suitable for growing in coconut groves. It can also be raised from seeds as well as slips. It produces 80-100 tillers/clump with a plant height of 275 cm. It has more leaves and non-lodging with high leaf stem ratio and quick regeneration capacity. It yields about 270 t/ha/year of green fodder which is 16.4% increased yield in station trials and 10.44% in ART over CO1. The dry matter and crude protein contents are higher than CO1. It is highly palatable for cattle, goat and sheep.

Cumbu Napier Hybrid

KKM1 (IR 15507 x FD 429) : It was released during January 2000. It is tall growing, high tillering with non-lodging habit. It recorded an average green fodder yield of 288 t/ha/year with 44 and 50% increase over the check CO2 and CO3 respectively. This cumbu Napier hybrid is recommended for the garden land condition of Southern districts of Tamil Nadu. The fodder has more crude protein, calcium, potassium, magnesium, phosphorus, vitamin thymine and micronutrients like zinc and manganese than the checks CO2 and CO3.

CROP MANAGEMENT

For adoption

Application of 10 t/ha FYM along with 75% recommended NPK for CO3 Cumbu Napier Hybrid grass gave the highest green fodder yield of 364.9 t $ha^{-1}year^{-1}$, dry matter yield of 57.7 t $ha^{-1}year^{-1}$ and 4.9 t $ha^{-1}year^{-1}$ of crude protein yield with a higher net return under rainfed condition.

In Cumbu Napier grass planting of 3-4 feet long stem cuttings in furrow and buried recorded the highest green fodder yield of 375.3 t $ha^{-1}year^{-1}$ with the basal application of 100% NPK fertilizer.

Forage oats : Application of 50% NPK fertilizer (current NPK recommendation is 80:40:0 kg ha^{-1}) recorded the highest net return of Rs.4296 ha^{-1}.

Cumbu Napier - Hybrid grass - KKM1

Hybrid Sapota - CO3

SUGAR CANE

CROP IMPROVEMENT

Promising cultures

The promising early clone **C95081** and three mid late clones *viz.*, **C 95093, C 95292** and **C 95295** were proposed to the Co-ordinated Agronomic Experiments (2001 – 2002).

In early group, two clones *viz.*, **Si 88093** and **Si 91104** and a mid/late clone **Si 90023** are being evaluated under CAE trials (1999-2000). In the current year trial, the clone **Si 93066** (early) is being evaluated.

CROP MANAGEMENT

For adoption

Application of *Acetobacter diazotrophicus* enhanced the cane yield compared to Azospirillum application. The cane yield increase ranged from 6.89 to 7.15 per cent over Azospirillum application.

The crop sequence having sugarcane plant crop - ratoon sugarcane- Pulse-Green manure - Rice, maintained higher yields and quality of cane than sugarcane mono culture either as plant crops or plant - ratoon crops under permanent manurial trial. Application of recommended dose of NPK with organic manures sustained the productivity and fertility status of the soil.

The combination of distillery effluent irrigation (1:40 dilution) with recommended dose of NPK + FYM @ 12.5 t ha^{-1} was found to increase the cane yield from 102.2 to 167.3 t ha^{-1} and highiest cost benefit ratio of 2.16 was obtained. Soil fertility changes the available nitrogen and phosphorus and potassiums satus in soil was improved.

CROP PROTECTION

For adoption

Control of spiral nematode

Sugarcane intercropped with marigold or daincha and incorporated in soil 60 DAS, followed by application of either pressmud (25 t/ha) or neem cake (2 t/ha) was found to be significantly effective for the management of the spiral nematode *Helicotylenchus multicinctus* and increased the cane yield and CCS percentage. Highest cost benefit ratio of 1 : 2.2 was obtained in marigold intercropping coupled with the application of pressmud.

Imidacloprid against termites

Sett dip with imidacloprid 70 WS at 0.1% (100g in 100 lit of water/ha) for 5 mts or spraying of imidacloprid 200 SL at 250 ml/ha over setts and covering with soil resulted in increased sett germination, protected the crop from termite damage and recorded increased cane yield. It fetched additional income of Rs.20,700/- per ha and for spray over setts it was Rs.18,750/- per ha. Residue analysis in the sugarcane juice from the above treatments revealed that the residue was below the detectable limit in HPLC.

BREEDER SEED PRODUCTION

The annual breeder seed production is being taken with 163 varieties in 26 centres of TNAU. All the indents received from State, GOI and Private, were met in full. The details on the quantities of breeder seeds produced and distributed are given in the table.

Table. Distribution of Breeder seeds – 1999 to 2000

Crop	Indented (kg)	Distributed (kg)
Paddy	38,967	57,219
Millets	411	676
Pulses	14,832	13,225
Oilseeds	71,134	90,277
Cotton	404	989
Forage Crops	136	284
Vegetable Crops	180	331
Total	**1,26,064**	**1,63,001**

WATER TECHNOLOGY

For adoption

Irrigation management in jasmine *(Jasminum sambac)*

Irrigation with the method Ridges & Furrows at IW/CPE ratio of 1.0 recorded the maximum yield of 2318 kgha-1 with water consumption of 1287 mm. The lower water consumption was recorded in ring basin (731 mm) method of irrigation at 0.4 IW/CPE ratio whereas the other two methods *viz*., check basin and ridges and furrows have consumed 940 and 783 mm respectively.

Evaluation of trickle irrigation, surface irrigation systems for sugarcane

Sugarcane yield was higher under paired row (60/100 cm : Normal 80 cm) system with drip irrigation scheduled at three days interval based on pan and crop factors

as compared to conventional furrow irrigation system. The increase was 21 and 23.4 t/ha for 80 & 100% ET_C respectively. Depending upon the water availability, the cane crop can be irrigated either at 60% or 80% or 100% ET_C. The water requirement varies from 1523 mm, 1799 mm, 2075 mm respectively.

Sewage irrigation to cotton

Alternate sewage + well water irrigations supplemented by gypsification to neutralize RSC (Residual sodium carbonate) of sewage helped in enhancing the productivity of cotton MCU 5 by 1798 kg seed cotton/ha without the addition of fertilizer.

Drip verification for brinjal

Drip irrigation for brinjal improved the yield and water use efficiency than surface irrigation. Drip irrigation once in two days at 75% of surface irrigation was best in increasing fruit yield (37.8 t/ha) by 50% together with the water saving upto 26.3% and higher water use efficiency (57 kg ha mm^{-1}) over surface irrigation eventhough drip irrigation at 100% of surface irrigation registered the highest yield of 38.7 t ha^{-1}.

Moisture stress management in maize

The water stress at silking stage of crop growth reduced the yield significantly (3.11 to 6.88 per cent) over non-stressed plants and the foliar spray of potassium dihydrogen phosphate (2.0 per cent) within 10 days of the stress period increased the grain yield by 5.86 per cent.

Methods for computation of runoff of micro watersheds

The Green-Ampt method computed high runoff than/curve number technique and strange table methods in dry and slightly moist conditions. However, high runoff values were observed in curve number technique during wet conditions of catchments. From the statistical analysis, the Green-Ampt method predictions closely matched with the observed data. Suitable designs for percolation ponds and other water harvesting structures could be made, provided the assessment is accurate which ultimately cuts 20-30% of costs, over estimated by the strange table method.

Sustainable management of tank irrigation system in Tamil Nadu

Agriculture followed by fisheries and trees on bunds are the dominant uses when use share is considered while considering revenue mobilization agriculture and social forestry are leading. In the revenue realization approach, social forestry is the leading one. Domestic and livestock uses, though dominant in the preferential rankings of the local people owing to historical reasons; are difficult to be quantified in terms of their actual uses, however, when opportunity cost principle is adopted, the conclusions are not altered significantly.

Crop water balance of system tank in Periyar Vaigai command area

The ET component of water balancing was worked out and for daily waterspread area a pan factor of 0.7 was used to estimate the evaporative loss while a pan factor of 1.0 was assumed to estimate the losses over the area covered by weeds (Ipomoea). The *total water loss was estimated as 28949.97 m^3 and the transpiration loss as 7279.29 m^3*. There is a need for rehabilitation of irrigation tanks by clearing weeds, encroachments and desilting every year in the off season. The old system of **"Kudimaramathu"** can be pursued vigourously or the **"Water Users"** organizations may be involved.

Suitability of rice varieties for rotational water supply (RWS)

The study to evaluate a suitable RWS schedule for rice varieties indicated that among four different rice varieties tried ADT 39 performed better followed by ADT 36 and MDU 5. Among the RWS schedules, 4 days on – 3 days off either with one or two irrigations in the rotation produced significantly higher yield compared to other irrigation cycles.

PLANT MOLECULAR BIOLOGY

Promising cultures

One dihaploid rice of the F_1 of the cross IR50/*Oryza rufipogon* was found to perform well consistently over three years by recording 6 t/ha with a duration of 115-120 days.

Transformation

Insect and disease resistance genes viz., *Galanthus nivalis* agglutining gene *Bt* genes: *cryIA(b)* and *CryIA(c)* against BPH and lepidopteran pests of rice, *Xa21* gene, rice chitinase gene and Thaumatin like protein (TLP) gene against bacterial leaf blight and fungal disease of rice and gibberellic acid insensitive gene and constans gene for reduction in height of the rice plant and early flowering induction have been used in the transformation experiments.

Transgenic rice lines harbouring *cryIA(b)*, rice chitinase, GNA and Bt genes have been generated and are being evaluated. A transgenic green house constructed with the funding from Govt. of Tamil Nadu is to be used to evaluated these transformants before release for cultivation.

Molecular Markers

Two RAPD markers for each of leaf folder and stemborer resistance have already been identified and they were converted into STS markers for using in Marker Assisted Breeding.

Two microsatellite markers have also been identified to link with WBPH resistance gene and using these markers four resistant recombinant inbred lines combining high yield have been identified and being evaluated in yield trials.

Two drought tolerant local land races *viz*., Nootripathu and Norungan have been identified as donor for drought related traits and work is in progress to introgress the drought related genes from these land races to the high yielding drought susceptible cultivars (IR 20) through Marker Assisted Back cross breeding.

Gene Isolation

A new cry 2 gene different from the existing cry 1 gene has been cloned from an indigenous isolate of *Bt*., which is more effective in controlling the lepitopteran pests. An alpha amylase inhibitor protein, a chitinase gene from a fungal origin and an antiviral protein from *Bougainvillea* have been characterized.

Micropropagation

A trial was conducted with 120 banana plants developed through tissue culture with three replications in a farmer's field at Thondamuthur block of Coimbatore district. It was observed that a reduction in duration of 40-45 days in TC plants as compared to the controls (raised by suckers). The micropropagated banana plants produced an average of 8-9 hands with 150-170 fingers as against 6-8 hands with 84-144 fingers per plants through conventional planting. About 20% of the TC plants have produced more than 8 suckers. The trial will be repeated to confirm the results.

Among the 26 indigenous isolates of *Bt* screened only one isolate showed a new type of crystal protein profile. Among the nine indigenous isolates of *Bt* screened for toxicity against rice leaf folder larvae, one isolate showed 100% mortality at the conc. Of 120/ug protein per ml at 36h. Whereas the standard strain of *Bt*, HD1, showed 87% mortality at the conc. Of 30/ul per ml.

BIOCHEMISTRY

Alpha-amylase inhibitor in relation to bruchid resistance : Alpha amylase inhibitor protein conferring resistance to bruchids is isolated from *Vigna sublobata* system which is low in molecular weight.

Finger printing of cotton varieties : Cotton varieties were characterized using RAPD markers and it was found that upland cotton (*G. hirsutum*) shows high levels of polymorphism.

AGRICULTURAL AND RURAL DEVELOPMENT
AGRICULTURAL ECONOMICS

Study of the feasibility of installing processing units in the premises of the regulated markets : Anthiyur Market was found to have the potential for processing groundnut and cotton; Punjaipuliampatti for groundnut; Sivagiri for gingelly; Erode for turmeric and Avalpoonthurai for coconut. All the above commodities are at present marketed by the farmers in either unprocessed or uncleaned form. Both the farmers and traders expressed their willingness in favour of installing the processing units such as ginner, oil expeller, polisher and gingelly siever in the premises of the regulated markets.

Economics of teak in farmers field in Tamil Nadu : Inadequate availability of water for irrigated annual crops and scarcity of the farm labour were the most important reasons for planting teak in the farm field by medium and large farmers. The average area planted per farm was 0.50 acre. The maximum volume of wood that can be attained under the existing condition in 20 years is 12 cft. If more volume is needed then the farmers have to keep the trees for longer period. If it is harvested as a pole in 10 years, a net income of Rs.21687 per acre per year can be obtained.

An economic analysis of cut flowers in Nilgiris district : Cut flowers viz., Carnation, Asiatic Lilies, Gladiolus and Gerbera which are raised in ployhouses. All the four cut flowers except Gerbera were sold in Bangalore market to the wholesalers. The entire transportation cost had to be borne by the growers. Gerbera was sold locally.

Polyhouse installation cost for Carnation amounted to Rs.13357 per 100 m^2 area. The total cost of cultivation of Carnation for 18 months in 100 m^2 was Rs.65143. The planting material is imported largely from Netherland and it accounts for 55 per cent of total cost of cultivation. The net return was Rs.58429. Profit realized from Asiatic Lilies was Rs.74310 per 100 m^2 area. Three crops of Gladiolus were raised within a period of 18 months. The net return worked our Rs.25000 for 100 m^2. One cycle of Gerbera takes a duration of three years and the net return realized was Rs.62188.

Staggered payment by the buyer (wholesaler), high cost of transport to Bangalore, lack of cold storage facilities at the production centre and wide fluctuations in flower prices and poor market information were the major constraints encountered in marketing cut flowers. Besides, rust and wilt attack on Carnation and fusarium on Asiatic Lilies were identified. Based on the results of the study it is recommended that the area under Carnation, Asiatic Lilies, Gladiolus and Gerbera could be increased in The Nilgiris district under polyhouse situation by commissioning and establishment of cold storage facility in the district. Availability of planting materials at cheaper cost, provision of appropriate technical guidance in management of pests and diseases, access to marketing information are critical to make cut flower a successful enterprise. Establishing an auction centre for cut flowers in the district may be a medium term strategy.

Economics of rice crops in Tamil Nadu : The three types of rice cultivation viz., dry, semi-dry and transplanted rice were examined during the Samba season (July-Dec.) which accounts for 75 per cent of the total rice area in the state.

The dry sowing farmers had large holdings when compared with semi-dry and transplanting farmers. Primary and middle level education was a common standard in Semi-dry and transplanting establishment while majority of the dry sowing farmers were illiterates. In all the study districts, the seed usage was more in dry and semi-dry establishments when compared to transplanted rice. The use of farm yard manure was more under dry sown rice and semi-dry rice (7.96 t/ha) when compared with transplanted rice and correspondingly the fertilizer use was less in dry and semi-dry rice in all the districts compared with transplanted rice. The labour requirement was less for dry and semi-dry rice during initial stages, whereas the labour requirement was more for weeding and harvest operations. On the contrary, transplanted rice required more labour during the initial stages of the crop.

The cost of cultivation of per hectare of dry sown rice worked out to Rs.11388, Rs.9012, Rs.8495 in Kancheepuram, Ramanathapuram and Perambalur districts respectively with a net return of Rs.4714/ha and Rs.2494/ha for the latter two districts. In semi-dry rice establishment, the cost of cultivation was high in Ramanathapuram district (Rs.10688/ha) compared to other districts. Among the transplanted rice farmers, the highest return was achieved in Kancheepuram district (Rs.5333/ha).

The production function analysis concluded that labour and nitrogen use were the significant factors contributing for rice yield increase under dry sown rice, whereas irrigation, potassium, labour use and plant protection were the significant factors contributing for rice yield increase under semidry rice. In transplanted rice, the significant factors for rice yield increase were nitrogen and potassium.

In direct sown rice, 31, 55, 23 and 28 % were the output reduction due to technical efficiency and 8, 6, 1 and 7 % yield reduction due to allocative inefficiency in Kancheepuram, Perambalur, Ramanathapuram and Nagapattinam districts respectively. The economic efficiency in direct sown rice could be raised by 36.5, 10.70, 23.70 and 33 % respectively for the above districts by optimum resource allocation.

In semidry rice, 29, 10, 11 and 34 % were output reduction due to technical inefficiency and 28, 6, 10 and 1 % loss due to allocative efficiency in Kancheepuram, Perambalur, Ramanathapuram and Nagapattinam district respectively. The economic inefficiency revealed that the rice yield could be increased in these districts by 49, 155, 20 and 35 % respectively by optimum resource use.

In transplanted rice about 11, 34, 25 and 37 % output loss due to technical inefficiency was observed in Kancheepuram, Perambalur, Ramanathapuram and Nagapattinam districts where as output loss due to allocative inefficiency were 9, 8, 8 and 1 % in these districts respectively. The economic inefficiency in transplanted rice

revealed that there is a scope for increasing production by 19, 39, 31 and 37 % in these districts respectively through optimum resource allocation.

Thus, a comparison of efficiency levels indicated that in all the rice establishment types, the technical inefficiency is the major constraint.

Production and marketing of hybrid cotton seeds in Tamil Nadu : The cost of cultivation of hybrid seed cotton was estimated at Rs.93551/ha in which the human labour component alone accounted for.48405 (51.5 per cent). It was also established that 60 per cent of the total cost of cultivation was due to the employment of female labourers. The hybrid cotton seed growers were able to realize a per hectare gross income of Rs.241236. The seed growers of Salem district were able to get a higher gross income of Rs.256056/ha.

In Salem district, nearly 60 per cent of the seed firms sold their product to dealer for credit and 75 per cent of the seed firms accepted the return of unsold hybrid cotton seeds from the dealers. The major problems in marketing of hybrid cotton seed was that the unpredictable demand for the cotton due to unpredicted next year rainfall. Non-availability of number of contract farmers for production of hybrid cotton seeds and dumping of hybrid cotton seeds in Tamil Nadu by Andhra Pradesh, Maharashtra and North India forced the seed firms to reduce the selling price.

It was concluded that the cost of hybrid seed cultivation can be reduced by introduction of suitable Cytoplasmic Male Sterile line (CMS) and educating the farmers and providing market intelligence regarding prices to encourage hybrid seed production activities.

Economics of rainfed chillies: At current level of prices, direct cost of production of chillies was estimated as Rs.6549.56/ac in southern agro-climatic zone. Of which 32.21 per cent of cost covered by manures and fertilizers followed by 27.41 percentage of cost by human labour. Forty eight per cent of the total final product marketed through commission agents at Vilathikulam and Sattur. Thirty six per cent of the product marketed through regulated market and also through wholesaler. Only ten per cent of the product marketed through local merchants and directly by themselves. Sixty eight per cent of the marketed surplus and 32% of marketable surplus were created. Price spread showed that 69 per cent of share in consumer's price goes to the primary producer. Net income realised by the producer was Rs.6670.50/ac. Resource use efficiency analysis showed that an increased application of one rupee value of manures and fertilizers would increase the output of chillies by 0.0039 quintals and an increase of one unit of human labour would increase the output by 0.0182 quintals. Distribution of rainfall, labour availability and technical know-how are the major constraints felt by the farmers in study area.

Paddy Seed Production Training

Field Demonstration

AGRICULTURAL EXTENSION

Analysis of farm diversification : The economic efficiency in terms of production efficiency in net return, technology and low-cost technology use level, employment generation capacity, farm family employment, self-reliant, self-reliant levels and self-sufficiency level of diversified farms was significantly higher than non-diversified farms. The economic and ecological efficiency and sustainability level of the system-'Paddy+Banana+Dairy' was the highest. As the sustainability of the system Paddy + Banana + Dairy was higher, this can be popularized in the Tambiraparani, river command areas for adoption by large number of farmers.

Socio –Technological analysis of drip Irrigation : Water scarcity, less labour requirement and high weed menace were considered as the most influential factors for adoption of drip irrigation technology High initial cost, delay and irregularities in getting subsidy, clogging of emitters were the major constraints in the adoption of drip. Drip manufacturing companies and researchers in drip irrigation design aspects should come forward to design a low cost drip irrigation technology so that large number of farmers would adopt this technology in Coimbatore district.

Farm mechanization in Tamil Nadu : The farm mechanization increased in sugarcane *viz.*, 180 quintals/ ha while in cotton it was 0.250 quintals/ha. The constraints experienced were inadequacy of hiring agency, non-availability of improved farm equipments, higher rate of hiring charges, frequent power cut and fragmented land holdings. Setting up of private or co-operative custom/service/ hiring agency, providing continuous power supply, increasing the rate of subsidy, encouraging local artisans and developing locations-specific, low cost- effective and efficient farm equipments were the identified solutions.

Small and fragmented land holding is a major constraint in farm mechanization. For this government and non-government agencies should encourage self-help groups through a co-operative approach or through farmers "organizations, periodical training programmes and demonstration may be conducted for the farmers" on various aspects of existing and introduced farm equipments – machinery, implements and tools.

Plant Protection of vegetables grown : About 33.33 per cent of the vegetable growers had low, medium and high levels of knowledge and adoption about the recommended plant protection measures. Almost all vegetable growers were aware about the bad effects of continuous application of chemicals but they did not apply the correct dosage of pesticide. Extension agency should contact the vegetable growers frequently and explain the importance of IPM technologies.

Impact of poverty alleviation programmes on rural poor : Majority of the beneficiaries did not utilize the loan for the purpose for which it was sanctioned. About 40 per cent of the beneficiaries have not repaid the loan amount. Nearly two-fifths of the beneficiaries were distributed in low, medium and high levels of overall extent of

participation. The beneficiaries were found to differ in their changes due to poverty allevation programmes in their dressing pattern health care behaviour, occupation, income and savings, personal changes, economic changes, distance travelled, contact with development personnel and social participation. Inadequate loan amount, unsuitable repayment schedule, cumbersome procedures, inadequate marketing facilities, non-availability of required trade and lack of training were the major problems expressed by the beneficiaries. The poverty alleviation programmes lack potential in providing increased employment and to increase the income. It is necessary to identify the training need of the beneficiaries as a follow-up in order to make them effectively utilize the programme components and thereby getting additional employment and income.

HORTICULTURE

CROP IMPROVEMENT

FRUIT CROPS

For adoption

Sapota CO 3 : (Cricket Ball / Vavivalasa). With its upright growth habit and compact canopy, it is highly suitable for high density planting at a spacing of 5-6 m either way against the conventional spacing of 8 m x 8 m. Fruits are oblong ovate in shape, pleasantly flavoured, very sweet with a TSS. of 24.2 and a total sugar content of 10.8% at full ripened stage. The average yield is 157 kg per tree compared to 101.3 and 109.5 kg by CO1 and CO2 respectively. The hybrid registered an yield increase of 64.0% and 61.8% over its female and male parents respectively.

Promising cultures

Mandarin orange CR 54 (Bergamotta) , introduced from Institute National De La Research Agronomique, San Guilana, France, recorded the highest yield of 59.8 fruits/tree, with the highest fruit weight (221.3 g) and pulp weight (156.5 g).

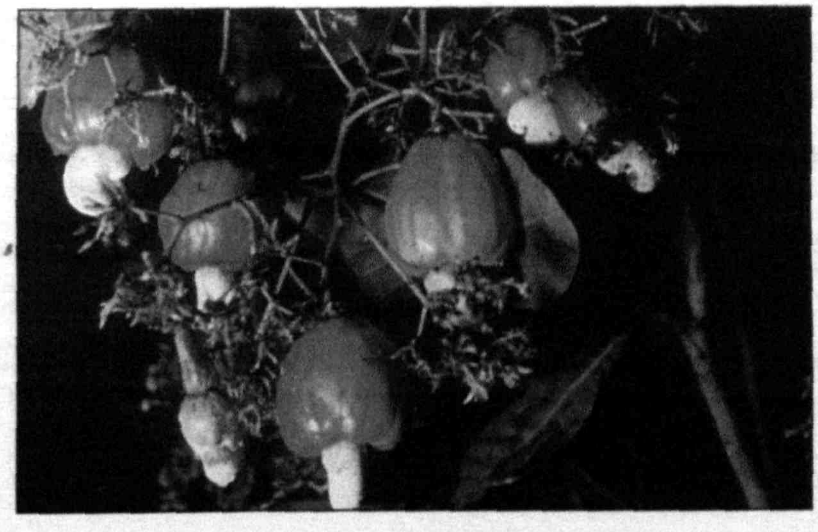
CROP MANAGEMENT

For adoption

Application of DAP along with composted coir pith @ Rs.6 t/ha recorded the highest fruit yield (21.4 t/ha) in Mandarin orange. The quality of fruits was found improved due to P_2O_5 through DAP application as assessed by no. of fruits / tree (405 fruits weighing 53.4 kg), TSS (10.5), acidity (23.3 mg/100g), sugar (11.9%) and juice content (52.5%).

In banana cv. Robusta, planting 3 suckers/hill at a spacing of 1.8 x 3.6 m and application of 50% of the recommended dose of fertilizers i.e. 300:90:450 g/pit

Vegetable Chilli - CO4



Cashew - VRI4

developed the highest mean bunch weight of 24.38 kg and total yield of 110 t/ha which is 27.70 % increase over conventional planting system.

VEGETABLE CROPS

CROP IMPROVEMENT

For adoption

Annual Moringa PKM 2 : (MP_{31} Eppodum ventranlocal x MP_{28} Arasaradi local) It can be easily propogated through seeds. The pods are 125.2 cm long with 8.3 cm girth, weighing 280 g, less seeded, more fleshy and delicious. It comes to bearing in six months after sowing and suitable for growing in different cropping systems and home garden. The average number of fruit is 220 pods/tree/year. Ratoon crops can also be taken for three years. It was released during 2000 year for large scale cultivation.

Peas Ooty 1 : A selection from PS-33, with high yield (11.9 t/ha) in a duration of 90 days as compared to 7.49 t/ha by Bonneville. It is a dwarf type, suitable for all the three seasons. Pods are dark green, long and smooth with 9 seeds, which possess good cooking quality. This was released during 2000 for large scale cultivation.

Vegetable Chilli CO4 : A selection from an open pollinated Srilanka type. It is a dwarf, closely branched plant. A heavy yielder of green fruits (23 t/ha) compared to PKM 1 (11.73 t/ha) and suitable for making chutney, curry and pickles and matures in 165 days after transplanting. The fruits are dark green, stout, less pungent (0.29% capsaicin) and turns red colour after ripening. Suitable for cultivation kharif and rabi seasons in Coimbatore, Erode, Dindigul, Karur, Thanjavur, Nagapattinam, Thoothukudi, Thiruvannamalai, Kancheepuram and Kanyakumari districts. It is moderately susceptible to thrips, mites and whitefly. This was released during 2000 for large scale cultivation.

Promising cultures

In brinjal a hybrid **CBH 1** (EP 45 x CO 2) was found to be high yielding of 3.17 compared to MEBH-39 (69.74 t/ha). It is under final testing.

A hybrid bitter gourd **COBGH 1** (MC 84 x MDU 1) was found to be consistently high yielding (51.8 t/ha) against in MBTH.101, MBTH.102 (19.27 t/ha) (Mahyco, Jalna) in private hybrids.

A promising pumpkin line **CM 2** recording consistently higher yield with a mean of 31.477 t/ha has been promoted to MLT testing.

CROP MANAGEMENT

For adoption

Application of metlachlor at 0.75 kg/ha (dual 50 EC at 1.1 l/ha) as pre-emergence followed by hand weeding once on 45 DAS efficient by controlled weeds in bhendi and produced the highest yield of 6.31 t/ha with highest benefit cost ratio of 3.67:1.

Nursery management (soil application of carbofuran @ 1 kg a.i./ha in nursery beds + seedling dip by imidacloprid @ 0.2% for 3 hours before planting) followed by three sprays of imidacloprid (0.1%) at 30, 40 and 50 days after planting recorded the least incidence of chilli mosaic disease (20.15%) as compared to control (45.50%).

A fertilizer dose of 140:70:70 NPK kg/ha super imposed with 30 min. soaking of seedling roots in *Azospirillum* @ 2 kg/ha was optimum to get maximum yield of 3675 kg/ha for a seed crop of PLR 1 chillies.

FLORICULTURE

CROP IMPROVEMENT

Promising cultures

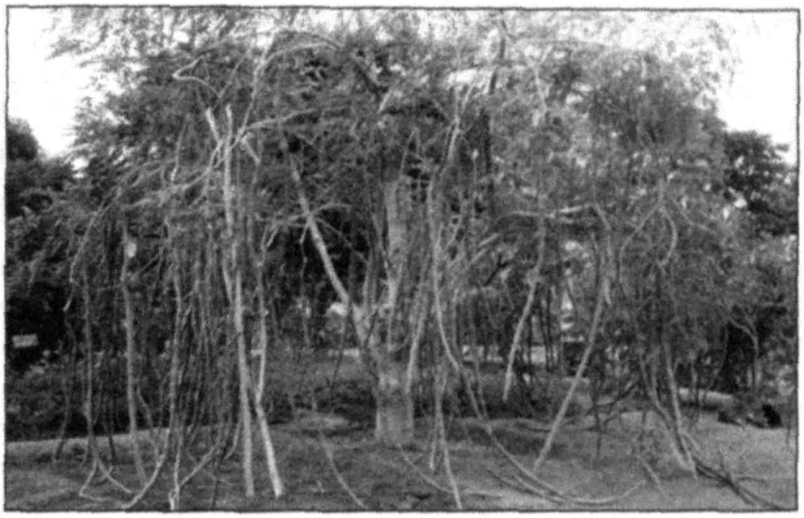
The accession Gerbera GJ 23 had the highest stalk length and flower diameter in both under open and shade net conditions. The highest mean stalk length of 55.2 cm and diameter of 9.1 cm was recorded in the accession grown under 60 per cent shade net. It was 25.7 and 15.2 % greater than those grown under open field conditions.

The orchid *Epidendrum radicans* was found to be the tallest (70.4 cm) while *Aeriedes crispa* was to the shortest (18.6 cm). The maximum number of flowers per inflorescence (130.7) was recorded in *Ascocentrum* sp. and a minimum of 3.2 was recorded in *Paphiopedilum villosum*. *Cymbidium lowiamm* recorded the longest flower stalk (101.5 cm) and the shortest stalk 2.2 cm was recorded in *Acampe* sp. while *Cattleya* Hybrid 206 flower diameter was the maximum (14.7 cm) and the minimum was with *Liparis viridifolia* (0.3 cm).

CROP MANAGEMENT

For adoption

The flowers harvested at tight bud stage showing unfurling of one petal in the morning hours kept wrapped in cellophan paper packing for 16 h and 24 h were significantly found to be the best for long distance transportation to get the longest vase life of 5.33 and 4.67 days respectively. It also had the lowest percentage of petal wilting (6%) and the largest flower diameter (7.2 cm) in 24 h packing.



Annual moringa - PKM2

Peas - OOTY1

Spraying of nutrient solution containing potassium nitrate (2.63 g), ammonium sulphate (0.4 g), magnesium sulphate (2.04 g), monocalcium phosphate (1.0 g), ferrous sulphate (1.0 g) manganese sulphate (2 ml of 1% solution) dissolved in 4.5 litres of water at 7 days interval significantly recorded an increased growth, productivity and vase life of flowers.

SPICES AND PLANTATION CROPS

CROP IMPROVEMENT

For Adoption

Cashew-VRI 4 : (Selection from Vazhisodanaipalayam of Cuddalore) It is having high nut yield of 18.10 kg/tree as against 10.84 and 7.92 kg/tree registered by VRI 3 and VRI 2 respectively. The medium size nuts weigh 6.63 g with shelling percentage of 28.5.This was released during 2000 for large scale cultivation.

Promising cultures

PN 2 (Somaly) a black pepper performed well with an average yield at 4.53 kg green berries/vine, closely followed by PN.63 (380 kg) in the 10th year of planting.

ACC No.KS-12 senna selection consistently performed well during 7 seasons from 1991 to 1998. The average fresh leaf and pod yield was 582.4 kg/ha and 326.1 kg/ha in **KS-12** while the check recorded 360.12 kg/ha and 110.12 kg/ha respectively.

CROP MANAGEMENT

For adoption

Application of recommended dose of fertilizers (100 kg FYM, 400 g N, 350 g P_2O_5, 1200 g K_2O/tree/year) and 50 g in each of *Azospirillum* and phosphobacteria resulted in the highest bud yield (4.92 kg) with more annual increase in tree girth (5.34 cm) in clove.

MEDICINAL PLANTS

CROP IMPROVEMENT

Promising cultures

Tippli (Piper longum) : A selection viz., PL.9-15 from the PL 9 was found to be highly prolific. The increase in the dry spike yield over the check the corresponding parent (PL.9) was 49.88 and 31.5% respectively.

AGRO FORESTRY

TREE IMPROVEMENT

For adoption

Simaruba oil tree (Paradise tree) : It is an evergreen species with attractive dark green oily foliage with good architecture having tolerant to drought and is dioecious The seed kernEl contains 55.60% oil. It is a suitable for growing in all types of soil except coastal sandy soil in Tamil Nadu.

TREE MANAGEMENT

For adoption

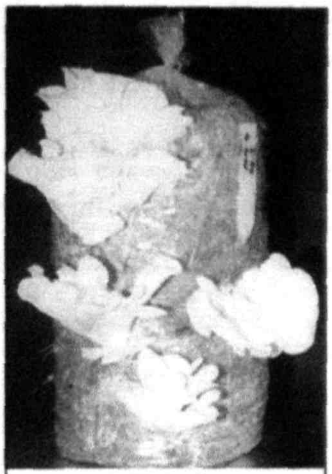
Effect of neem leaf powder in prolonging the storage life of *Casuarina equisetifolia* : The seed viability of *Casuarina equisetifolia* is lost within 5-6 months. An attempt was made to develop a technology to slow down the speed of deterioration. The potential of neem leaf powder was better or equivalent than the chemical acetyl salycilic acid in controlling the senescence process. After nine months of storage, neem leaf powder recorded 34.5 % germination against 15.1 % recorded by the control.

Standardization of potting mixture for nursery seedling production : Seedlings grown in red soil:sand:goat manure proved superior by recording 6.5, 1.2, 34.6 and 2.0 % increase in shoot length, root length, vigour index and total dry weight respectively over the seedlings, grown in red soil: sand FYM. Hence it is recommended that red soil: sand goat manure (2:1:1) is the best potting mixture for *Albizia lebbeck*.

Standardization of quick viability test for *Albizia lebbeck* : The best preconditioning method standardized is nipping of the seed coat followed by water soaking for 12 h and the best preparation method was found to be longitudinal splitting of cotyledons. 1.0% concentration of triphenyl tetrazolium chloride was optimum to test the viability of the seed through topographical tetrazolium staining method.

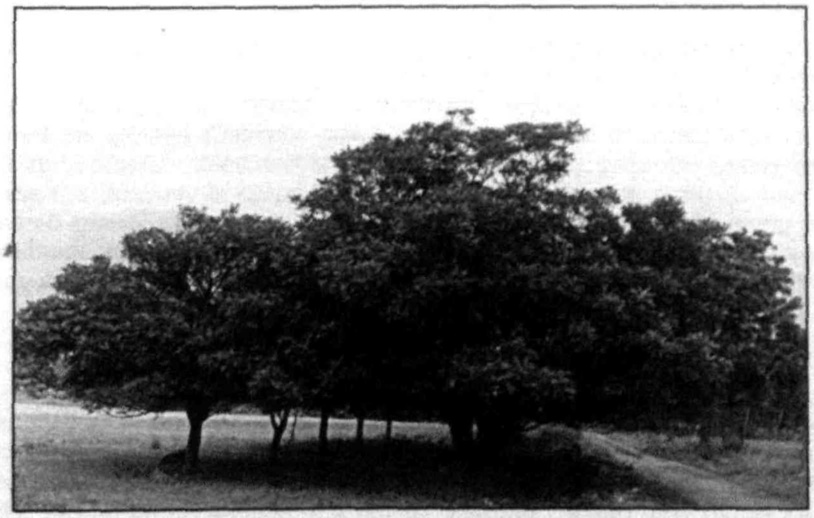
Effect of month of cone collection on seed quality of *Casuarina equisetifolia* : All the estimates were at a low ebb during the months between June and November and showed a hike for seed germination and seedling vigour during December, January, February and March. It is hence recommended that seed collection of *Casuarina equisetifolia* must be taken up during December, February and March.

An effective method of upgrading the *Casuarina equisetifolia* seeds : Seed separation at a machine setting of vertical height, horizontal height and air blow rate adjustments of 2.0 and 3, respectively was found useful to separate filled seeds (88 %) from ill filled seeds (12 %) of *Casuarina equisetifolia* which resulted in improved germination (17 %) and seedling vigour (30 %) by the first grade (A) seeds over the control seeds.



MDU 2

Oyster Mushroom - MDU2



Simaruba Oil tree (Paradise tree)

Utilization of sewage sludge for tree nursery and sewage irrigation for trees : Tree species were grown under different soil media in the nursery viz., Soil: Sand FYM (3:1:1) and Sludge alone and evaluated. All the tree had recorded maximum height and collar diameter in sludge soil media. Hence sewage sludge the best nursery soil media for raising tree seedlings. Six tree species which were irrigated with sewage water performed well when compared to control.

Effect of seed source on seed and seedling quality of*Albizia lebbeck* : The seeds of *A. lebbeck* were collected from 12 seed sources spread all over Tamil Nadu. Among them seeds collected from Tirunelveli recorded the highest germination percentage (94.0 %). However, Coimbatore source recorded the longest root (32.2 cm) and Aruppukottai seed recorded the longest shoot (21.1 cm); Aliyar recorded the longest root (3.02 g) and shoot length (4.49g). Coimbatore recorded 93 % of seedling survival. Regarding plant height, Mettupalayam registered maximum of 48.0 cm. Erode recorded the largest shoot collar diameter (0.86 cm) From a holistic consideration, Coimbatore source for *Albizia lebbeck* seed is considered desirable.

MUSHROOM

Yellow blotch of Oyster mushroom (*Pleurotus florida*) caused by *Pseudomonas agarici* and *Pseudomonas tolasii* was found to be common in ten mushroom farms surveyed in different districts of Tamil Nadu. The disease was predisposed by contaminated spawn, mites, mushroom flies, diseased *sporophores* and improper water spray methods on beds and mushroom buds. Spraying antibiotics like streptomycin sulphate or Oxytetracycline or streptocycline @ 200 ppm after the completion of spawn run reduced yellow blotch disease incidence (81.3 to 83.7 per cent).

Frequently occurring mycoparasitic moulds observed in oyster mushroom beds and spawn in different farms were *Trichoderma viride, Penicillium spp. Aspergillus flavus. A.niger, Neurospora crassa, Sclerotium oryzae, Coprinus comatus, Phemeroplasmodium sp.* and *Rhizopus stolonifer.* The sources of contamination and spread were from improperly dried and stored paddy straw, wet gada and gunny cloths used to increase the humidity in cropping rooms, damaged coconut thatches over the roof, contaminated spawn used, illfilled sorghum grains used for spawn making, improper sterilization methods followed, storage of spawn bags on floor, excess moisture on mushroom beds and activities of phorids, sciarids, beetles and mites in mushroom beds.

HOME SCIENCE

Processing of weaning mix based on greens and malted grains : Feeding of 6 and 7 months old children with weaning mix consisting of malted wheat greengram flour, skimmed milk powder, powdered sugar and greens powder (dried) containing 17.99 g protein, 345.50 μg β carotene, 0.4 mg B_1, 250 mg Ca and 3.61 mg of Fe per 100 g increased. In their crown heel length, weight and haemoglobin concentration.

The weaning mix can be prepared by simple technique at household level and the same may be commercialized.

Utilisation of jack seed for the preparation of South Indian dishes : Jack seed flour which is rich in many ingredients when mixed with cereal pulses flour with different levels was found to be suitable for the preparation of savoury dishes (Murukku & Pakoda) upto 50 per cent and for the bakery products, chappathi and idiappam (breakfast foods) only 25 per cent incorporation was acceptable and gave good quality physical parameters and high consumer acceptability scores. Halwa prepared from jack seed flour (100%) had high organoleptic scores (85-90%).

Ready to use chekkurmani soup mix : Ready to use chekkurmani soup mix prepared by mixing dried chekkurmani powder (10g) tomato powder (5.0g), onion powder (0.5g), corn flour (2.0g), spices (0.5), pepper (0.3g) and salt (1.2g) is rich in β carotene, vitamin C and minerals. Five gram of soup mix is mixed with 200 ml of water and boiled for 2 to 3 minutes and served hot. The organoleptic evaluation indicated even after storing six month the original characteristics of the soup powder was retained and also found to be highly acceptable.

Value addition products from rice bean : Rice bean *(Vigna umbellate)* which is a recent addition to pulses, can be substituted, either partly or fully in the various preparations of pulse based foods. Rice bean based snacks such as murukku and pakoda were prepared by incorporating 25, 50 & 75% with Bengal gram flour and rice flour. The products with 25% and 50% incorporation with Bengal gram flour and rice flour had high score values. Rice bean kheer (payasam), sweet ball and munthiri kothu were also prepared and found to be highly acceptable in colour, texture, flavour and taste.

FOOD SCIENCE & NUTRITION

Pre packaging studies on KKM 1 brinjal under ambient conditions using polybags of varying thickness (100 G, 200 G, 300 G and 400 G) and ventilation (0%, 0.5%, 1.0%, 2.0% and 2.5%) revealed physiological loss of brinjal fruits weight (PLW) had a decrease with increasing thickness and decrease in ventilation of the polybags. The PLW was least in fruits stored in 100 G polybags and maximum in the fruits stored in 400 G ploybags. The shelf life was the maximum (8 days) in the fruits (500 g) packed in 200 g polybags. The organoleptic scoring was 5.51 for the stored fruits, compared to the freshly harvested fruits (16.35). There was a decrease in the protein (from 1.70 to 1.48%) and ascorbic acid content (from 10.2 to 7.9 mg per 100 g) and an increase in the fibre content (from 1.27 to 1.30%) of the stored fruits on comparision to the freshly harvested fruits.

Storing moringa fruits in 200 G polybags corresponding to 0.5% ventilation was the best. The fruits could be stored in good condition for upto 5 days, after which there

was rhizopus infestation at the terminal ends of the fruits. A pre treatment with 500 ppm of bavistin, followed by packing in 200 G polybags with 0.5% ventilation was found to extend the shelf life for upto 7 days. Dipping the terminal ends of the fruits in wax followed by storing the fruits in 200 G polybags corresponding to 1.0% ventilation extended the shelf life for upto six days. Studies on the storage quality of blanched moringa fruits stored in 2% brine revealed that the fruits would be preserved in a good condition for over 3 months.

SERICULTURE

MULBERRY MANAGEMENT

Among the four mulberry genotypes evaluated has recorded higher fresh leaf yield (10,432 kg/ha/harvest). Five splits 'P' application recorded higher leaf yields (SSP – 7045 kg and EFYM-7530 kg per crop) than two splits (SSP-6398 kg and EFYM 6718 kg per crop). 'P' application as EFYM has recorded higher yield.

CROP PROTECTION

The leaf webber, *Glyphodes pulverulentalis* had 24.46, 53.20, 50.12 and 39.71% shoot damage in Coimbatore, Erode, Salem and Dharmapuri districts respectively. The overall mean short damage was 41.87 % and the mean cocoon yield loss per 100 dfls was 9.51 kg and was maximum from November to January. A population density of five larvae per plant caused cent per cent damage to mulberry shoots. Higher moth catches were recorded during November – January months *Vitex negundo* leaf extract (10%) can be used as an alternative to insecticides for the management of leaf webber in mulberry.

The incidence of Spiralling whitefly (SWF), (*Aleurodicus disperses)* was high during winter months and decreased in the summer season on mulberry. The mean percentage of leaf damage on mulberry due to SWF was 27.4, 36.0, 40.3 and 35.9 in Coimbatore, Erode, Salem and Dharmapuri districts respectively. Cent per cent leaf damage registered an yield loss of 34.03 kg/100 dfls. Sticky cum light trap was more appropriate tool for SWF monitoring and control than yellow sticky trap.

Turmeric powder + chalk powder (1:5) at 1 kg/100 dfls reduced the infection of grasserie by 63.16 per cent and enhanced the larval, cocoon and silk characters. Soyaflour based formulations of *Caesalpenia coriariae, Acacia sumo* and *Psoralea coryleifolia* were effective in reducing the grasserie by 74.80, 72.80 and 73.53 % respectively. The aqueous extract of *Acalypha indica* at 1000 ppm reduced grasserie mortality by 72.08 %.

By adopting IPM practices including the release of hyperparasitoids, the uzifly incidence in silkworm was brought down to 14 % from 34 % by which the farmers could increase the cocoon yield to 49.5 kg from 29 kg/100 dfls.

AGRICULTURAL ENGINEERING

To reduce the work load and for better working efficiency the following equipments / gadgets were designed, developed and released for the farming community during January, 2000.

TOMATO SEED EXTRACTOR : It is a small and compact unit with an efficient extraction of seeds from tomato with the flesh which can used for making by products. It needs lesser water requirement.

Power source	:	0.5 hp motor
Capacity	:	180 kg of fruits / hour
Labour requirement	:	One person
Cost of operation	:	Rs.10 per kg of seed
Cost of the machine	:	Rs.10,000/-

PULPER CUM WASHER FOR COFFEE : It can be operated either by motor or by diesel engine with less water requirement (4 litres/kg of fruit). Both pulping and washing operations are performed in the same unit.

Power source	:	3 hp motor
Capacity	:	500 kg of fruits / hour
Labour requirement	:	Two persons
Cost of the unit	:	Rs.50,000/-

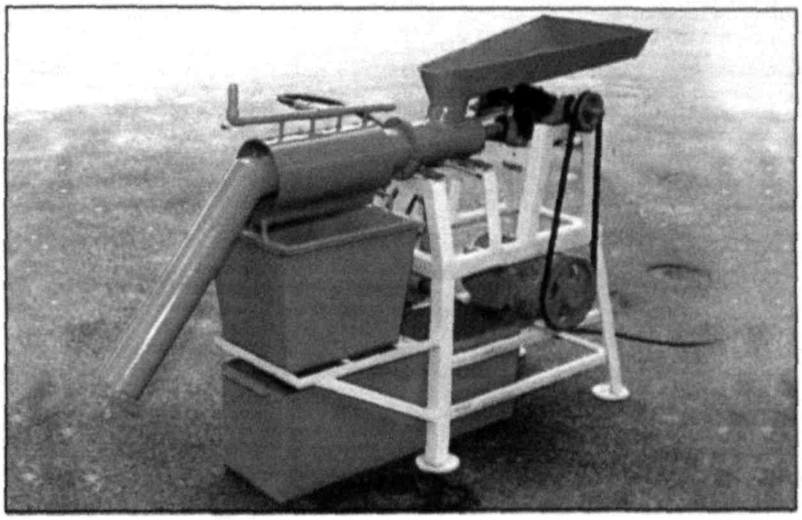
VACUUM PACKAGING OF BANANA : Helps to increase the shelf life of banana by 21 days with low operating cost. It is suitable for 'Rasthaly' variety and has no deterioration in the quality

Capacity	:	500 kg / day
Fungicide used	:	Carbendazim (Bavistin) 1 ppm
Labour requirement	:	Two persons
Thickness of polythene bag used	:	400 gauge LDPE
Cost of operation	:	Rs.1 per kg of fruit.

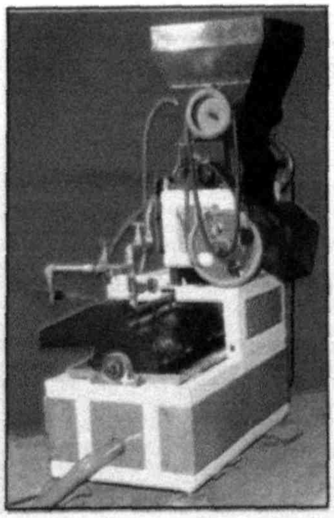
BRINJAL SEED EXTRACTOR : It efficiently extracts of seeds from brinjal fruits. The water requirement and operating cost are low. Germination is not affected.

Power source	:	3 hp electric motor
Capacity	:	120 kg of fruits / hour

Farm Implements



Tomato seed extractor



Pulper cum washer for coffee

Power tiller operated auger digger - model II

Power tiller operated turmeric harvester

Labour requirement	:	One person
Cost of operation	:	Rs.10 per kg of seed
Cost of the unit	:	Rs.15,000/-

BIOGAS CUM SOLAR POWERED LIGHT TRAP : It is an environmental friendly device, can light with solar or biogas whichever is available. It can operate with renewable sources of energy with no operating cost.

Function	:	Pest monitoring and sampling
Power source	:	Solar powered 9 W compact Flourescent Lamp(or) 50 W biogas mantle light
Capacity	:	Can work for a period of 4 hours with a charged battery by solar energy and 10 hours with 1 M^3 of biogas
Savings	:	One unit (kWh) per hour
Cost	:	Rs.3550/- (light trap : Rs.1550/- + PV panel - Rs.2000)

DIRECT PADDY - GREEN MANURE SEEDER FOR WETLAND : Exclusive cultivation of green manure crop is avoided cost of cultivation is reduced by Rs.3000 / ha. Age of rice crop is reduced by 10 days because the establishment shock of seedlings is avoided. Weeding and interculture operations become easier as paddy is sown in rows. Weed problem is less due to green manure crop.

Functions	:	Direct sowing of paddy and green manure seeds in wet land
Power source	:	Manual
Labour requirement	:	One person for pulling and one helper
Field coverage	:	0.40 hectare (1 acre) per day
Increase in paddy yield	:	800 kg/ha
Cost	:	Rs.5000 including cono-weeder

POWER TILLER OPERATED AUGER DIGGER - MODEL II : This can be easily attached to any make of Power tiller. It can drill 20 and 30 cm diameter holes upto 40 cm depth and suitable for agro forestry plantation with 28 and 88% saving in cost and time.

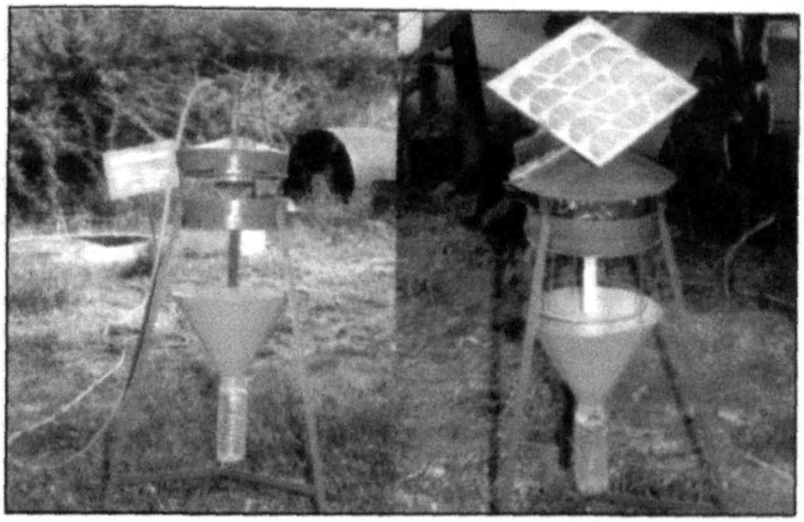
Coverage	:	160 to 200 holes / day
Cost	:	Rs. 15,000/-

Coverage	:	0.4 ha/day/8 hrs The harvesting efficiency is 99%
Cost	:	Rs.10,000 with gear box.

BASINLISTER / BROADBED FORMER CUM SEEDER ATTACHMENT TO CULTIVATOR : The basins / broad beds and furrows formed at regular intervals at the time sowing of crop in dry farming conserve adequate soil moisture for the utilization of crop at its critical stages. Increased moisture retention of 10 per cent is achieved Significant increase in yield is observed in both main and inter crop.

Coverage	:	3.5 - 4 ha / day
Cost	:	Rs.15000 (without cultivator)

SCHEFFLER COMMUNITY SOLAR COOKER : The cooker has 6.5m^2 reflecting surface area with the secondary focusing reflector. The focused and reflected radiant heat is utilized for thermal applications. The stagnation temperature recorded on the top surface of the iron plate was 257°C. Invariably hot temperature of above 200°C prevailed from 11.00 AM to 3.00 PM on sunny days. Thirty litres of water placed on the solar cooker reached the boiling point around 12.00 to 1.00 PM and the temperature was maintained for about 1½ to 2 hours. The performance test revealed the utility of the cooker for heating, cooking and processing applications. In a fruit processing plant the cooker can be utilized for sterilization, pasteurization, syrup and pulp heating, concentration and evaporation operations.



Biogas cum solar powered light trap

Direct paddy - green manure seeder for wetland

CHAPTER V

EXTENSION EDUCATION

The Directorate of Extension Education and the various transfer of technology ›ntres of the Tamil Nadu Agricultural University are engaged in the transfer of ›chnologies emerging from the research programmes of the university for the benefit of ›e farming community. The details regarding extension education activities are ›rnished below:

›rishi Vigyan Kendras

The five Krishi Vigyan Kendras functioning at Coimbatore, Madurai, Sirugamani, ›andhiyur and Vridhachalam, carried out the following TOT activities.

(In numbers)

›Training ›ogrammes	Demons-trations	Group / village meetings	Farm / field days	Farmers' days	Farm advisory services	Farmers queries
357	97	99	17	5	746	425
Articles ›ublished in ›dailies and farm ›magazines	Radio programmes / announcements (AIR)	Video programmes prepared / seminars	Publications brought out	Film / Slide shows	Exhibitions	Compaigns / seminars
76	118	46	57	14	74	81

›ant Clinic Centres

The five Plant Clinic Centres functioning at Tirurukuppam, Vrinjipuram, ›ivilliputhur, Killikulam and Bhavanisagar carried out the following activities.

›ainings	Demonstrations	Village & group meetings	Farmers / field days	Farm advisory services	Farmers queries
103	54	113	6	419	215

Articles published in dailies and farm magazines	Radio-programmes broadcast	Video programme	Released publications	Exhibitions conducted	Campaigns seminars organised
83	57	1	10	2	14

Institution - Village Linkage Programme (IVLP)

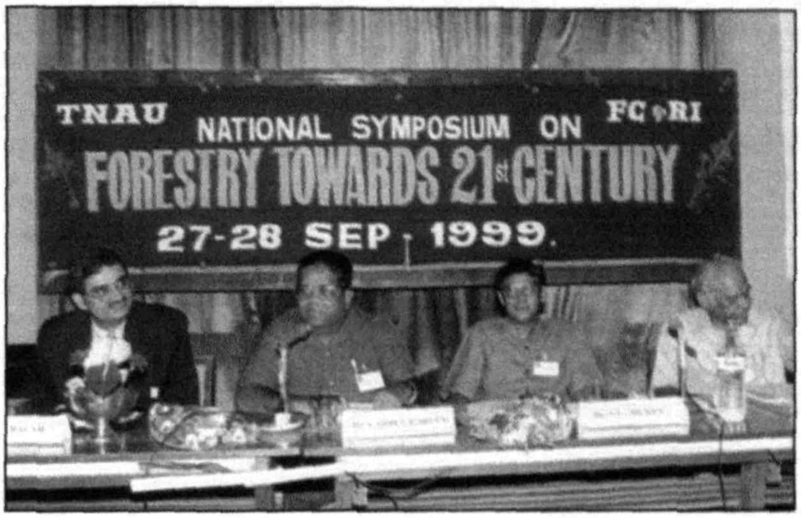
The special project "Technology assessment and refinement through institutio linkage" is functioning at Muthanankuppam village of Vridhachalam taluk, Cuddalor district. Based on the agro-ecosystem analysis, the problems pertaining to the villag were identified under different production systems and suitable technologica observations were formulated, assessed / refined through verification and on-farm trial in real farm situation with active participation of the farmers. Eight experiments wer carried out in different cropping patterns and pests and diseases of crops were evaluate for the benefit of farmers. The centre also published two research papers, two booklet and three popular articles.

TNAU - IVDP (Integrated Village Development Programme)

One of the ways by which the linkage of inter-dependence between the scientist of SAUs and the farmers can be strengthened is to adopt the villages by the scientist and create an interactive mode between the scientists and the farmers, both of then work and toil for increasing the agricultural production of the Nation. This would creat an opportunity to discuss the problems in tapping the proven technologies and th available natural resources to their full potentials and demonstrating the same o scientific basis. With this aim, the village adoption programme otherwise known a Integrated Village Development Programme was launched by Prof.Dr.S.Kannaiyan, Vice Chancellor, Tamil Nadu Agricultural University on 16.06.2000.

This novel scheme is aimed at, in a holistic manner, with a multi-disciplinar mode, through the application of science – oriented proven technologies. Therefore, th over all objective is to help the farmers and other rural folk in improving their socio economic well-being through the application of science oriented technologies. Th specific objectives, however are to

1. assess the potentials of the natural resource-base of the adopted village,
2. analyse the gap between the potential and actual outputs and the problems an constraints associated with and
3. identify the ways and means of bridging the gap, through the application o science oriented agricultural technologies.



National Symposium on Forestry

Farmers day at ADAC & RI Trichy

In this IVDP, all the 10 colleges, 31 research stations, 5 plant clinic centers and 5 Krishi Vigyan Kendras of the TNAU are involved. All Heads of Colleges, Transfer of Technology Centres and Research Stations have identified two villages each to disseminate the technologies and make farmers to adopt them. Regular farm advisory services were carried out in addition to extension activities to solve the field problems for holistic development. The following would be the strategy.

1. Conducting benchmark survey of the village adopted
2. Planning for the development of the village as a whole through the application of science oriented technologies. In this process the participatory approach, involving all the stakeholders viz., Scientists, Farmers, Development Executives and Local bodies, will be involved.
3. Executing the plans in a phased manner.
4. While executing the village development activities, proper monitoring and mid-term corrections, wherever needed would be made. At the end of each season / year, evaluation and controlling would be resorted to.

In a broader perspective, the developmental areas that would be covered in the villages are :

1. Improvement of natural resources of the villages.
2. Adoption of new production techno- logies in Agriculture and Horticultural crops.
3. Adoption of improved animal husbandry practices.
4. Use of improved farm machineries, implements and tools.
5. Application of food and nutrition technologies in rural homes.
6. Popularising integrated farming systems approach in increasing agricultural productivity and farm profit.
7. Development of agro-based industries and agribusinesses and organising entrepreneurial development programmes
   Others, that have bearing on the holistic development of the village.

Communication Centre

It conducted distant learning programmes like Farm School on All India Radio and Correspondence Courses. More than 10,000 persons visited the Central Exhibition and Museum and got benefitted.

DISTANCE LEARNING PROGRAMMES

Farm School on All India Radio

Lessons on scientific agriculture based on weather forecast, IPM in coconut cultivation and production and preservation of edible mushroom were offered, benefiting 182 participants.

Correspondence Courses

Correspondence courses namely IPM in commercial flower cultivation, tre cultivation in farms, ornamental flower cultivation, lawn making and gardening, convertin farm waste into value-added products, modern banana cultivation, coconut cultivatio and its allied enterprises, modern sugarcane cultivation, production and export o ornamental cut flowers, IWM, bee keeping, value added agricultural products and cotto cultivation were offered, for which 758 farmers enrolled. Contact programmes for 1 courses were conducted and certificates were issued to the registered farmers.

Video Production Unit

A total of 46 programmes was prepared and was sent to Doordarshan Kendra Chennai for telecast. Video lessons numbering 261 were sold to extension officers farmers and public. Further, video coverage was arranged during 60 important function of the University. In addition, 44 video shows were conducted, 35 radio programme were recorded and 53 audio-cassettes were sold.

Training Unit

It conducted 22 training programmes benefitting 353 participants. The participant were extension personnel from state development departments, subject matte specialists and extension officers from other states, IAS probationers and housewives.

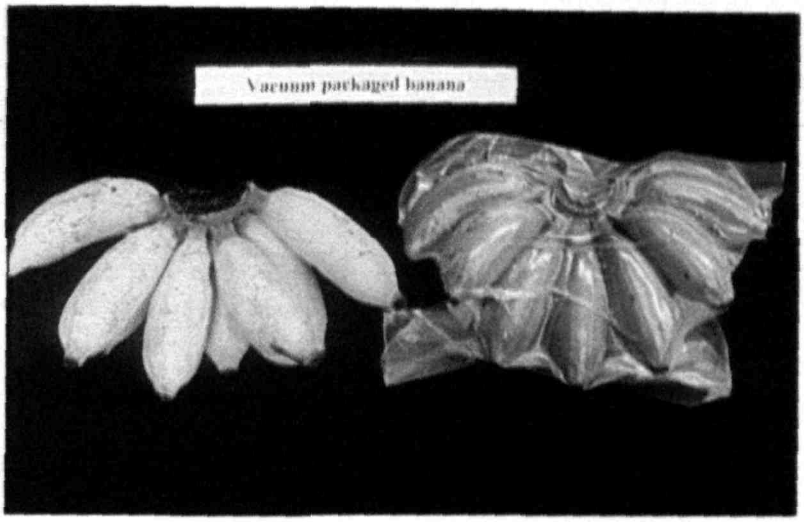
PERIODICALS

TNAU Newsletter

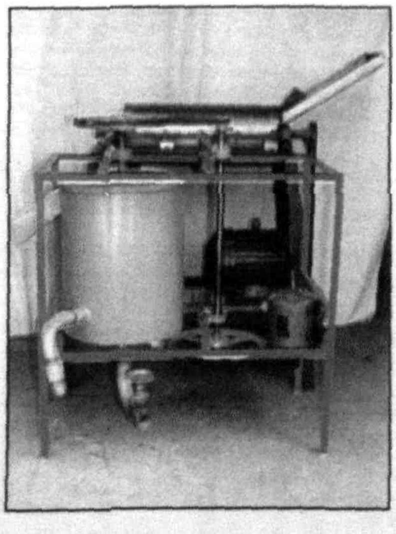
Published monthly, with the latest research findings and various extensic activities and sent to all the agricultural universities, selected research organisation development departments and scientists in India and abroad.

TNAU Seithimadal

A Tamil monthly newsletter in which details on season and location specif recommen- dations, new findings, forecasting of pests and diseases, climatic change and their impact etc. are published. At present, 1700 copies are printed and distributed t the conveners of Farmers' Discussion Groups of Krishi Vigyan Kendras, Farme Training Centres and officials of the development departments of the State.



Vacuum Packaging of Banana



Brinjal seed extractor

Basin lister / broad bed former cum seeder attachment to cultivator.

Drip irrigation in Coconut

APPENDIX I

IMPORTANT CIVIL WORKS COMPLETED

AHRDP

		(Rs. in lakhs)
1.	Supply installation testing and commissioning of 1.5 ton split AC unit to the education technology centre at TNAU, Coimbatore	0.82
2.	Providing 1.50 ton split AC unit to the Computer room in the P.G.Library atTNAU, Coimbatore	0.82
3.	Special repairs to south house at TNAU, Coimbatore	0.5522
4.	Ordinary repairs to new north guest house at TNAU, Coimbatore	0.2127
5.	Special repairs to trysem building at TNAU, Coimbatore	0.2710
6.	Providing additional Electrical Installation to the P.G.Lab of soil science department at TNAU, Coimbatore	0.2751
7.	Providing additional electrical installation to the Seminar Hall, P.G.Library at TNAU, Coimbatore	0.2256
8.	Providing power wiring to the laboratory of Cotton Breeding Station at TNAU, Coimbatore	0.9345
9.	Supply, Installation , testing and commissioning of 2 ton split AC unit to the Seminar Hall of the University Library at TNAU, Coimbatore	0.4726
10.	Providing Electrical Installation to the cage house of Animal Husbandry department, TNAU, Coimbatore	0.3094
11.	Providing Electrical Installation to deep litter houses III & IV at Animal Husbandry, TNAU, Coimbatore	0.1078
12.	Providing to Electrical Installation to Breeder House I & III Animal Husbandry, TNAU, Coimbatore	0.2119
13.	Providing Siruvani Water supply to the visiting Professors' quarters at TNAU, Coimbatore	0.4261
14.	Providing fencing to visiting professors quarters in TNAU, Coimbatore	0.9380
15.	Supply, Installation, testing and commissioning of 14 Nos. of 1.50 ton split AC to the Computer Centre at TNAU, Coimbatore	5.4866
16.	Providing sodium vapour lamp fitting from Silver Jubilee Arch to R.I. Building, TNAU, Coimbatore	1.9220

17.	Providing power wiring and Electrical Installation to the V SAT Computer room at Education Tech. Centre building at TNAU, Coimbatore	0.5386
18.	Providing P.W and E.I. to the computer room at the ground floor of university library, TNAU, Coimbatore	2.6460
19.	Providing P.W & Electrical Installation to the computer centre Students Welfare building at ADAC&RI, Tiruchirapalli	0.5064
20.	Providing Electrical Installation to the Computer room of Registara's Office at TNAU, Coimbatore	2.9770
21.	Providing false ceiling and particular in the computer room for the Registrar's Office at TNAU, Coimbatore	2.9201
22.	Providing additional Electrical Installation to the Gamma Chamber, TNAU, Coimbatore	0.3047
23.	Providing Electrical Installation to the staff room cum godown at department of Rice-Paddy, TNAU, Coimbatore	0.3050
24.	Providing Additional Electrical Installation to the workshop and staff room at Zonal Research Centre at TNAU, Coimbatore	0.2893
25	Providing false ceiling and Aluminium partition, spartek flooring in V SAT room 1st floor west side hall in Agrl. Education Tech. Coimbatore	0.6637
26.	Special repairs to Gamma Chamber (near Genetic glass house) at TNAU, Coimbatore	0.4380
27.	Special repairs to the Director's room Centre for Plant Protection Studies, TNAU, Coimbatore	0.9027
28.	Supply of installation, testing and commissioning of 2.00 ton split AC to the Library computer centre ay G.F and V SAT room at TNAU, Coimbatore	1.6754
29.	Providing UG cable panel board and additional electrical installation and Directorate of Research, TNAU, Coimbatore	1.3909
30.	Converting stock room into computer room in University library at TNAU, Coimbatore	1.4393
31.	Repair works to the toilet block in the KVK hostel and meeting hall of the DEE Office at TNAU, Coimbatore	2.2041
32.	Providing fencing for sewage treatment plant in TNAU, Coimbatore	0.5359
33.	Additional improvements to ARIS cell in Directorate of Research, TNAU, Coimbatore	3.2085
34.	Supply, erection and commissioning of 2 Nos. of 250 KVA and 1 No. 125 KVA generator sets for the 4 points power loads, TNAU, Coimbatore	31.5910

35.	Providing aluminium partition and false ceiling to instrument room at TNAU, Coimbatore	1.3441
36.	Providing AC sheet roof and flooring to the cattle shed at Paddy Breeding Station at TNAU, Coimbatore	1.3453
37.	Providing electrical installation to the seminar hall of Golden Jubilee building at TNAU, Coimbatore	3.1623
38.	Providing A1 partition between Directors room and professors room in Centre for Plant Protection Studies at TNAU, Coimbatore	0.5176
39.	Repairs to Mangalore tiled roofing and painting to walls doors and windows in Animal husbandry research centre at TNAU, Coimbatore	0.7238
40.	Construction of cess pool for toilet and Seed Technology Dept. at TNAU, Coimbatore	0.3199
41.	Arresting the leakage in expansion joint at P.G. block in TNAU, Coimbatore	0.2709
42.	Providing hand made carpet for Golden Jubilee hall at TNAU, Coimbatore	0.9480
43.	Providing venetian blind curtains to the golden jubilee hall at TNAU, Coimbatore	0.7238
44.	Supply and installation and commissioning 3 Nos. of 1.50 ton split A/C unit to the computer room of Registrar's office at TNAU, Coimbatore	1.0440
45.	Improvements to the Golden Jubilee hall at TNAU, Coimbatore	2.0801
46.	Repairs to toilet block in vertinary hospital and construction of drain for the goat shed in dept. of Animal husbandry at TNAU, Coimbatore	0.7581
47.	Arresting leakages in roof gutters at Bio-energy and processing workshop in TNAU, Coimbatore	0.3943
48.	Repairs to the existing Neon sign board at TNAU, Coimbatore	0.3338
49.	Installation testing and commissioning of online UPS of 5 KVA and 0I5 KVA capacity for providing uninterrupted power supply to the computer at Registrar's office at TNAU, Coimbatore	4.4250
50.	Laying of stone were pipe line for disposal of sewage water from CPMB building to manhole in TNAU, Coimbatore	0.9701
51.	Repairs to AHRDP and Examination cell in R.I building at TNAU, Coimbatore	0.9710
52.	Supplying and fixing the sun control film for Dean (Agri.) room, Committee room and AHRDP admission cell in TNAU, Coimbatore	0.8618

53.	Supplying laying of stone ware pipe line for the disposal of sewage from R.I. building to main sewage line at TNAU, Coimbatore	0.8775
54.	Transport of earth from the CPMB building in TNAU, Coimbatore	0.6750
55.	Conversion of library block left room in to Xerox room in TNAU, Coimbatore	0.1482
56.	Special repairs to CPMB building terrace and verandah in TNAU, Coimbatore	0.7251
57.	Providing fencing for newly constructed Professor's quarters at TNAU, Coimbatore	2.5355
58.	Purchase of pumpsets to TNAU, Coimbatore	0.7920
59.	Providing fencing in western side of Golden Jubilee building at TNAU, Coimbatore	0.4666
60.	Providing aluminium door to the proposed opening in the department of Plant Pathology at TNAU, Coimbatore	0.6051
61.	Converting audio visual lab and Directorate of Planning and Monitoring office in to a mini Seminar Hall at department at Agrl. Extension at TNAU, Coimbatore	2.9338
62.	Providing additional electrical installation to the Seminar Hall of Agrl. Extension department at TNAU, Coimbatore	1.6062
63.	Dismantling of 'A' type quarters (Qrs.No.A7) at TNAU, Coimbatore	0.3269
64.	Supply and laying vinyl flooring to the new convocation hall stage at TNAU, Coimbatore	0.3942
65.	Improvements to common toilet in P.G. block and flooring repairs to improvement at TNAU, Coimbatore	0.4830
66.	Providing aluminium partition for the cabins in department of Soil Science and Agrl. Chamber at TNAU, Coimbatore	0.2412
67.	Converting the existing soil washing room into modernished soil processing room in Nematology dept. at TNAU, Coimbatore	0.9563
68.	Providing plaster of paris to false ceiling for the stage in newly constructed convocation hall in TNAU, Coimbatore	1.6749
69.	Providing public addressing system to convocation hall at TNAU, Coimbatore	4.5788
70.	Providing additional illumination around V.C. bungalow and near Millet and Cotton offices at TNAU, Coimbatore	0.9978
71.	Providing P.W. 3 Nos. of Neon sign board in R.I. building at TNAU, Coimbatore	0.3065

72.	Providing Neon sign board at R.I. building at TNAU, Coimbatore	1.7905
73.	Providing aluminium partition in front of V SAT room in west side of Ist floor in Education Tech. building at TNAU, Coimbatore	0.3976
74.	Providing aluminium door and partition for visitors hall in V.C.chamber at TNAU, Coimbatore	0.7500
75.	Providing ladies toilet block and other importants to class room of U.G. Botany at Freeman building at TNAU, Coimbatore	1.9547
76.	Providing electrical installation to the growth chamber of Azolla building at TNAU, Coimbatore	1.9770
77.	Remodelling the U.G. laboratory in ground floor of department of Environmental Science at TNAU, Coimbatore	1.0948
78.	Installation testing and commissioning of 6 Nos. of 1.50 tons split AC and voltage stabilizer for Golden Jubilee Seminar Hall at TNAU, Coimbatore	2.0750
79.	Providing fencing for A.P. quarters and B type quarters at TNAU, Coimbatore	2.1563
80.	Providing electrical installation to Seminar Hall and Nematology lab at TNAU, Coimbatore	0.4319
61.	Providing additional chairs to the V.C. Office committee room in TNAU, Coimbatore	0.3570
62.	Remodelling the rear side rooms in *Azolla* building in TNAU, Coimbatore	0.9683
63.	Providing hand rails and marble stone laying to newly constructed convocation hall front entrance steps at TNAU, Coimbatore	0.7176
64.	Construction of ornamental tub in the lawn in front of convocation hall at TNAU, Coimbatore	0.2930
65.	Supply of automatic electric water heater and its accessories to teachers hostel, WTC hostel and North house at TNAU, Coimbatore	0.5272
67.	Providing pressed tiles to the North wing terrace East and West end portion of R.I.Building at TNAU, Coimbatore	1.8215
68.	Providing facilities of computer room for students in Home Science College at AC&RI, Madurai	0.7214
69.	Providing power wiring at examination hall at TNAU, Coimbatore	0.1781
70.	Providing improvements of electrical installation to the teachers hostel WTC hostel and north house at TNAU, Coimbatore	0.1305
71.	Supply of exhaust fan at Examination Hall at TNAU, Coimbatore	0.5121

PC&R

(Rs. in lakhs)

1.	Laying of stone ware pipe line in the Rear side of ladies hostel mess at TNAU, Coimbatore	0.8050
2.	Painting to the stock room in students canteen in TNAU, Coimbatore	0.2288
3.	Repairs to front side passage in student canteen in TNAU, Coimbatore	0.8793
4.	Laying of stoneware pipe line in the 'P' quarters at TNAU, Coimbatore	0.2540
5.	Providing stall arrangements in Stadium (Play ground) for farmers day function on January, 2000	0.6848
6.	Providing Grill works for the window opening in the Registrar office education section at TNAU, Coimbatore	0.7005
7.	Providing P.W to the computer room at P.G. hostel and Ladies hostel at TNAU, Coimbatore	0.1836
8.	Engraving the letters on the marble stone and painting the same at TNAU, Coimbatore	0.6804
9.	Repairs to Vice-Chancellors camp office at TNAU, Coimbatore	0.8225
10.	Providing Adanga marble stone for Generator room inauguration function at TNAU, Coimbatore	0.6275
11.	Providing Adanga marble stone for computer room inauguration function at TNAU, Coimbatore	0.9852
12.	Providing Aluminium partition to the computer room in Kaveri hostel and P.G. hostel at TNAU, Coimbatore	0.2731
13.	Providing pandal arrangements for convocation hall opening ceremony at TNAU, Coimbatore	0.1509
14.	Repair works to old kitchen washing room in Ladies hostel at TNAU, Coimbatore	0.1822
15.	Special repairs and annual maintenance to the V.C's bungalow in TNAU, Coimbatore	1.1622
16.	Face lift to the generator room in TNAU, Coimbatore	0.1700

CAPITAL

(Rs. in lakhs)

1.	Strengthening the boundry by barbed wire fencing on the south side of eastern block in field No. 69, 72, 73 along Thondamuthur road, TNAU, Coimbatore	2.1641

2.	Strengthening the boundry by barbed wide fencing in Northern side of eastern block in field No.NA.5 & NA.7, TNAU, Coimbatore	1.2164
3.	Construction of compound wall in Eastern block (East side) in field No.73 main campus, TNAU, Coimbatore	3.0551
4.	Repair works in CAO's room in the Registrar's office, TNAU, Coimbatore	0.1477
5.	Special repairs to roof leakages and other works to the old quarters at Aduthurai	1.1260
6.	Providing power wiring to the computer room at Seed Tech. dept. at TNAU, Coimbatore	0.3832
7.	Providing false ceiling to the flower store in Seed processing complex at TNAU, Coimbatore	0.6174
8.	Providing additional light fan facility at central evaluation hall and office of the controller of examination building at TNAU, Coimbatore	0.1719
9.	Construction of compound wall fencing, steel gate and name board at ARS, Ramnad	1.6621
10.	Construction of polynet house at AC&RI, at Killikulam	1.2565
11.	Providing fencing around the field No.284 & 285 at TCRS, Yethapur	3.0598
12.	Providing electrical improvements to the Vice-Chancellor's Bungalow at TNAU, Coimbatore	0.1728
13.	Special repairs to office and farm main store at ARS, Kovilpatti	0.4452

ICAR

(Rs. in lakhs)

1.	Special repairs to NARP main building ladies hostel at ADAC&RI, Tiruchirapalli	1.5641
2.	Special repairs to Trysem building at ADAC&RI, Tiruchirapalli	0.7174
3.	Special repairs to KVK hostel building at ADAC&RI, Tiruchirapalli	0.2579
4.	Providing cupboards in hostel I for Augmentation of existing facilities at FC&RI, Mettupalayam	0.5500
5.	Special repairs colour washing and white washing of student mess at FC&RI, Mettupalayam	0.1408
6.	Special repairs to students hostel I at FC&RI, Mettupalayam	0.8131
7.	Repairs to external sanitary arrangements to the students (P.G. Trainees) hostel building at FC&RI, Mettupalayam	0.1640

8.	Cement painting and white washing to the students (P.G. trainees) hostel building in FC&RI, Mettupalayam	0.1780
9.	Providing A1 partition to seminar hall for centre for PB and Genetics at TNAU, Coimbatore	0.8110
10.	Providing strengthening of Local Area Network at college campus of TNAU, Coimbatore	12.1093
11.	Providing creation of Local Area Network at college campus of TNAU, Madurai	1.6456
12.	Providing creation of LAN at college campus of TNAU at Trichirapalli	1.6804.
13.	Providing creation of LAN at college campus of TNAU at Killikulam in Tirunelveli	3.4721
14.	Providing creation of LAN at college campus of TNAU at Kumulur at Tiruchirapalli Dist.	2.3880
15.	Providing creation of LAN at college campus of TNAU at Periakulam in Theni Dist.	2.4917
16.	Creation of LAN facilities in TNAU college campus of Mettupalayam in Coimbatore dist.	4.0131
17.	Purchase of 2 Nos. of 1.50 ton A.C. unit (including installation) and 2 Nos. of 4 KVA stabilizer for Dean / F.C. & RI, Mettupalayam	0.6750
18.	Providing telephone cabin to Ganga Kaveri hostel at TNAU, Coimbatore	0.1574
19.	Providing power wiring and electrical installation to the prepared computer lab at Home Science College at AC&RI, Madurai	0.4103
20.	Providing UG cable for street light and pump in the main building road leading to main gate AC&RI, Madurai	1.0208
21.	Providing facilities for computer room for students in Home Science College at AC&RI, Madurai	0.7214

NARP

(Rs. in lakhs)

1.	Special repairs to the Assoc. Professor & Asst. Professor's quarters (B5 & B6) and other staff quarters (C1&C2) in CRS, Srivilliputhur	0.2829
2.	Special repairs to seminar hall and construction of water tank in RRS, Aruppukottai	0.2355
3.	Repairs work for drivers quarters at HRS, Yercaud	0.1014
4.	Repair works for Assistant Quarters at HRS, Yercaud in TNAU	0.1014
5.	Repair works for Professor quarters ar HRS, Yercaud	0.0893

KVK

		(Rs. in lakhs)
1.	Providing stall arrangements from Anna Auditorium to Horticulture building for Farmers Day function in January 2000	0.1786

GOI – Regional Nursery

		(Rs. in lakhs)
1.	Construction of workshed for cashew graffing at RRS, Vridhachalam	0.2141
2.	Construction of ground level water tank at RRS, Vridhachalam	1.2674
3.	Strengthening of power supply to the seminar hall at Agrl. Economis at TNAU, Coimbatore	0.1905

APPENDIX II

LIST OF UNIVERSITY RESEARCH SCHEMES (1999-2000)

(i) PLAN

		Revised Estimate (Rs. In Lakhs)
1.	Establishment of Transgenic Green House Facility, Coimbatore	25.00
2.	Study on physiological bio-chemical and molecular mechanisms of Thermo sensitive Genic Male Sterility (TGMS) in rice ,Coimbatore.	3.50
3.	Study on Seed Technology of certain annual flowers, Coimbatore	6.00
4.	Production of stable Cytoplasmic genic Male sterile System (CMS) lines and hybrids in Sunflower, Coimbatore.	2.00
5.	Study for improving the yield of irrigated pulses (Blackgram) through plant type selection with increased percent of cross pollination, Aduthurai and Thanjavur	5.00
6.	Development of a Sera Bank for important Virus diseases occurring in Tamil Nadu ,Coimbatore	2.35
7.	Study on Capital formation in Agriculture in selected regions of Tamil Nadu, Coimbatore	3.00
8.	Study on factor productivity improvement analysis in Tamil Nadu Agricultural Sector, Coimbatore	2.00
9.	Study to improve field persistence of neem products in rice and rice based ecosystem, Aduthurai	2.50
10.	Study on capturing the benefits of North East Monsoon rain in Tamil Nadu, Aruppukkottai	1.67
11.	Scheme for starting Post Graduate Diploma in Plant Protection, Coimbatore	7.00
12.	Scheme for the establishment of an Advance Centre for Soil and Crop Management Studies, Coimbatore	13.18
13.	Scheme for strengthening of the training division in the Directorate of Extension Education, Coimbatore	5.56
14.	Scheme for strengthening of Estate Office, Coimbatore	9.06
15.	Scheme for starting of M.E. (Agri) in Post-Harvest Technology, Coimbatore	0.10
16.	Scheme for strengthening of radiation research, Coimbatore	4.52

17.	Scheme for strengthening of the Directorate of Research, Coimbatore.	7.19
18.	Development of suitable strain of *Azospirillum* for commercial crops, Coimbatore.	1.95
19.	P.G.Education and Training programme leading to M.Sc. Degree in Bio Technology, Coimbatore.	8.95
20.	Exploitation of hybrid vigour and development of superior hybrids in redgram, Coimbatore.	2.22
21.	Establishment of Video-Library, Coimbatore.	2.41
22.	Water Technology Centre, Coimbatore.	27.22
23.	Starting of Post-Graduate Programme leading to M.B.M, Coimbatore	5.10
24.	Development of monoclonal antibodies for RTV in rice and CMV and BTV in banana, Coimbatore.	1.25
25.	Scheme for the establishment of a Centre for Sericulture, Coimbatore	7.78
26.	Scheme for strengthening Post-Graduate teaching and research in Agricultural Marketing Management, Coimbatore.	3.51
27.	Scheme for establishment of an Advance Centre for Studies on Plant Protection, Coimbatore.	6.95
28.	Remote Sensing Unit-Agricultural Applications, Coimbatore.	4.15
29.	Strengthening foliar diagnosis research to alleviate nutritional and physiological disorders in crop plants, Periyakulam.	4.27
30.	Studies on the decline in the yield of grapes, banana, tomato and brinjal due to nematode and fungus complex, Periyakulam.	3.10
31.	Horticultural College and Research Institute, Periyakulam.	13.05
32.	Anbil Dharmalingam Agricultural College and Research Institute, Trichy.	34.80
33.	Tissue culture technique for the forest trees, Mettupalayam.	2.21
34.	Isolation and popularisation of superior genotypes of match wood trees, Mettupalayam.	2.02
35.	Forest College and Research Institute, Mettupalayam	16.85
36.	Agricultural College and Research institute, Killikulam	80.70
37.	Establishment of Seed Technology Unit, Killikulam	3.05
38.	Scheme for strengthening and coordinating rice virus disease and mycoplasma disease, Madurai.	4.20
39.	Scheme for development of Seed Technology Unit, Madurai.	3.60

40.	Establishment of Centre for Nematode Pests of Crop Plants, Madurai	2.93
41.	Scheme for strengthening and coordinating rice entomological research, Madurai.	7.90
42.	Scheme for strengthening of research on chemistry of submerged soil, Aduthurai.	1.22
43.	Scheme for the production of breeder seeds in paddy,Aduthurai.	5.58
44.	Scheme for commercial exploitation of heterosis in rice, Aduthurai.	1.79
45.	Evaluation of scented and non-scented rices, Aduthurai.	1.11
46.	Scheme for the establishment of Regional Research Station, Aruppukottai.	15.48
47.	Scheme for upgradation of Tamil Nadu Rice Research Institute and reorganisation of the set up of the Directorate of Research, Aduthurai.	16.65
48.	Scheme for breeder seed increase, Bhavanisagar.	12.23
49.	Establishment of a seed complex including seed health, testing and training, Bhavanisagar and Mettupalayam.	4.47
50.	Scheme for upgrading Sugarcane Research Station, Cuddalore.	10.26
51.	Technology development of waste land reclamation in coastal area, Cuddalore.	2.69
52.	Establishment of laboratory for survey and research on golden nematodes of Potatoes, Vijayanagaram, Uthagamandalam.	6.70
53.	Scheme for investigation on the management of pests and diseases of hill fruit and vegetable crops of the Nilgiris, Uthagamandalam.	3.53
54.	Sub-project for strengthening Horticultural Research Station, Thadiyankudisai.	1.16
55.	Operational research on pests and diseases management in rice, Kattuthottam, Thanjavur.	2.54
56.	Scheme for vegetable seed production, Palur.	3.54
57.	Mass production and quality control of bio-fertilizers, Paiyur.	2.37
58.	Sub-project for strengthening Regional Research Station, Paiyur.	11.57
59.	Scheme for strengthening of seed production programme, Pattukottai.	3.01
60.	NARP sub project at Thirupathisaram.	3.37
61.	Banana Research Station, Virinjipuram, Vellore.	9.35
62.	Scheme for the establishment of Agricultural Research Station, Vellore.	4.80

63.	Development of sorghum varieties for various industrial purposes, Vellore	1.90
64.	Scheme for strengthening of Coconut research in Thanjavur district, Veppankulam.	7.28
65.	National Pulses Research Centre, Vamban.	7.40
66.	Scheme for breeder seed production in groundnut, Vamban.	2.78
67.	Scheme for strengthening Plant Clinic Centres at Vellore, Tirur, Killikulam, Srivilliputhur and Bhavanisagar	15.21
68.	Scheme for research on improvement of cultivation of Palmyrah, Srivilliputhur and Killikulam.	1.79
69.	Scheme for research on intensification of medium staple Cotton, Srivilliputhur, Kovilpatti and Aduthurai.	5.62
70.	Scheme for research on introduction of new tree species, Coimbatore, Cuddalore and Vamban.	2.48
71.	Scheme for popularisation of agricultural implements through Krishi Vigyan Kendra, Coimbatore and Madurai.	3.48
72.	Scheme for seed production and seed storage studies on sub-tropical and temperate crops, Periyakulam (Kodaikanal and Thadiyankudisai sub-centres.)	4.07
73.	Scheme for strengthening of breeder seed-programme at Vridhachalam, Tindivanam, Kattupakkam and Periyakulam.	17.90
74.	Scheme for multiplication and distribution of Pulses, Vamban, Tindivanam and Coimbatore.	13.04
75.	National Agricultural Research Project, Cauvery Delta Zone, Aduthurai and Trichirappalli.	22.07
76.	Sub Project for strengthening Regional Research Station, Vridhachalam, Cuddalore, Tindivanam and Kattupakkam.	12.02
77.	Sub-Project for strengthening Regional Research Station, Aruppukottai, Srivilliputhur and Pudukottai (Vamban).	17.87
78.	Scheme for establishment of Regional Laboratory at Trichirapalli, Paiyur and Yercaud.	12.52
79.	Krishi Vigyan Kendra, Coimbatore and Madurai.	22.97

80	Scheme for starting bio-fertilizer production and quality control unit, Coimbatore and Madurai	3.74
81	Development of extra early rice variety, Aduthurai	1.42
82	Evolving chilli varieties resistant to mosaic and thrips, Killikulam.	1.40
83	Programming for diversified production activities for dryland and wasteland, Pudukottai (Vamban)	1.32
84	Strengthening the Department of Bio-energy, Coimbatore	5.02
85	Setting up a pilot plant for fruit and vegetable based processing industry, Periyakulam	1.22
86	Management practices for bamboo under irrigated conditions, Mettupalayam	1.39
87	Tree improvement in exotic species for wood based industries, Mettupalayam	2.01
88	Development of varieties resistant to rice blast, sheath rot and ragi blast using tissue culture, Coimbatore	1.28
89	Season specific seed production technology for the development of seed districts in generating quality seed for yield maximisation, Aduthurai	1.45
90	Scheme for exploitation of male sterile lines for developing hybrid cotton, Coimbatore.	4.22
91	On farm trials on improved technologies developed for crops grown in Salem and Dharmapuri districts, Salem.	3.20
92	Variety Release Award	1.00
93	Development of wastelands of Pasumpon Muthuramalingam and Ramanathapuram Districts through Crop Husbandry, Agro-Forestry and Horticultural crops, Ramanathapuram	6.85
94	Identification of efficient strains of micro organisms and development of processes for bio conversion of farm wastes and urban wastes, Cuddalore	1.20
95	Physiological studies on salt tolerance and development of rice varieties tolerant to coastal and inland salinity at Regional Research Station, Tirur.	3.75
96	Scheme on strengthening research on medicinal and herbal plants in the plains (Killikulam) and hills (Yercaud).	3.42
97	Setting of agro based industry for processing vegetables, jack, sugarcane and coconut, Horticultural College and Research Institute, Periyakulam	1.95

98.	Pollution due to Tannery, Cement factory, Paper Industry and Sugar factory and development of technology to overcome the problems, Killikulam.	3.43
99.	Advanced Centre for Training in Water Management, Coimbatore.	4.16
100.	Scheme for development of rice fallow pulses for Nellai Kattabomman and Chidambaranar Districts, Ambasamudram.	0.80
101.	Development of hybrid sesame for irrigated uplands, Vridhachalam.	0.95
102.	Development of maize varieties for industrial purposes, Bhavanisagar.	2.17
103.	Development of management practices for high productivity in Palm *Elaein guineensis*, Sirugamani.	2.03
104.	Establishment of model mechanised rice based farm in Cauvery Delta, Aduthurai.	1.02
105.	*Management of phytonematodes through biocontrol and cultural practices in Turmeric*, Bhavanisagar.	1.09
106.	*Scheme for research on arid zone fruit crops*, Kumulur.	1.29
107.	*Study on the salt encrustation problems in conveyance pipes and* measures to tackle them, Coimbatore.	0.21
108.	Studies on processing and packaging of mushrooms, Coimbatore.	2.70
109.	Study of potential and application of plasticulture in agricultural production, Coimbatore.	2.70
110.	Shifting of Engineering College-Establishment of the Departments viz., Farm Machinery, Soil and Water Conservation, Agricultural Structure and Bio Energy, Kumulur.	0.01
111.	Establishment of quality control laboratory for bio-fertilizers, Madurai.	0.80
112.	Development of improved selections and evolving management system in Jack, Vridhachalam.	1.80
113.	Improvement of samba chillies for quality and yield, Kovilpatti.	2.05
114.	Developing high yielding coconut varieties with desirable quality attributes for tender coconut water trade, Veppankulam.	0.63
115.	Characterization and reclamation of *theri lands* in Nellai-Kattabomman and V.O.C. districts, Killikulam.	0.65
116.	*Constraint analysis in production and marketing of coconut*, banana and sugarcane in Cauvery Delta, Thanjavur.	0.35
117.	Development of efficient strains of VAM and phosphobacterium for tree crops grown in lateritic soils, Vijayanagaram.	1.50

118.	Evaluation of honey bees in increasing crop production and enhancing economic benefit, Bhavanisagar.	0.95
119.	Establishment of Agricultural Research Station, Perambalur (land cost only)	5.00
120.	Standardisation of technologies for dryflower production , Periyakulam and Kodaikanal	7.85
121.	Introduction (indigenous and exotic), evaluation and selection of superior Turmeric genotypes with high curcumin for export, Coimbatore.	4.50
122.	Scheme for evolving production technologies for cut flower (Rose, Chrysanthemum and Orchids) under protected condition for export, Coimbatore	1.75
123.	Development of F1 hybrid for high yield and oleoresin content in chilli, Coimbatore	2.70
124.	Breeding for a dessert purpose baby corn, Coimbatore	2.00
125.	Use of earthworms as dispersal agents for beneficial microorganisms, Coimbatore	5.95
126.	Increasing the post harvest life of fruits and vegetables by vacuum packaging, Coimbatore.	3.47
127.	Testing cotton seed purity by protein isozyme and molecular catalogue, Coimbatore	1.90
128.	Agro- climatic regional planning for Coimbatore district, Coimbatore.	1.00
129.	Establishment of pilot plant for commercial production of predators *Cryptolamus montrusieri* and *Chrysopeia cornea*, Coimbatore .	2.07
130.	Scheme for the development of management practices for the control of red rot (*Colletotrichum facatum*) disease of Sugarcane, Cuddalore	5.51
131.	Establishment of Tapioca & Castor Research Station, Yethapur.	26.75
132.	Increasing the post harvest life of under utilised fresh produces and processing and development of value added product, Madurai	3.80
133.	Introduction and testing of *mentha* spp, Vijayanagaram	4.35
134.	Evaluation of certain plant products for nematicidal and nematostatic products, Coimbatore	1.60
135.	Identification of natural plant products for the disease management in export oriented horticultural crops, Coimbatore	4.20
136.	Detection and development of diagnostic kit for important virus disease of banana in Tamil Nadu, Coimbatore	6.85

137.	*Strengthening of micro nutrient research for sustained agricultural production in Tamil Nadu, Coimbatore*	6.16
138.	*Strengthening of infrastructure and laboratory facilities at T&CRS, Yethapur*	10.00

(ii) NON PLAN SCHEMES

(Rs. in lakhs

1.	Scheme for improvement of sunflower in Tamil Nadu, Kovilpatti	2.85
2.	Scheme for coordinated agronomic experiments in Sugarcane, Cuddalore	4.98
3.	Scheme for research on nematode parasite of Sugarcane crop, Cuddalore	2.90
4.	Scheme for biological testing of Pesticides Laboratory, Vamban, Kovilpatti, Aduthurai and Tindivanam	6.10
5.	Scheme for improvement of groundnut through induction of mutation, Coimbatore	1.28
6.	Scheme for studies on the residues of pesticides in plant and soil, Coimbatore	3.31
7.	Scheme for research on citrus-dieback, Killikulam and Coimbatore	1.53
8.	Scheme for improvement of redgram and soybean, Vamban	2.85
9.	Scheme for evaluation of cumbu resistant to green ear and ergot diseases, Vamban and Kovilpatti	4.06
10.	Scheme for intensification of pulses research, Vamban	1.44
11.	Scheme for maximisation of pulses production, Vamban	2.55
12.	Scheme for improvement of millets for grain and fodder, Kovilpatti	2.64
13.	Scheme for improvement of wetland pulses, Aduthurai	3.62
14.	Scheme for coordinated agronomic experiments on Sugarcane, Sirugamani	5.20
15.	Agricultural Research Station, Ramanathapuram	4.38
16.	Scheme for surveillance of pests and diseases, Vellore	2.93

(iii) ICAR PARTLY FINANCED SCHEMES

		(Rs. in lakhs)
1.	All India Coordinated Research project on agronomic research, Coimbatore	22.60
2.	All India Coordinated Research project on water management, Madurai and Bhavanisagar	13.25
3.	All India Coordinated Research project on dryland agriculture, Kovilpatti	11.52
4.	All India Coordinated Research project on under utilized / under exploited plants, Mettupalayam	4.05
5.	All India Coordinated Research project on tillage requirement of major Indian soil for different cropping systems, Coimbatore	5.58
6.	All India Coordinated Research project on micro and secondary nutrients and pollutant elements in soil and plants, Coimbatore	6.80
7.	All India Coordinated Research project on long term fertilizer experiments, Coimbatore	2.16
8.	All India Coordinated Research project on agrometeorology, Kovilpatti	4.50
9.	All India Coordinated Research project on investigation of correlation of soil test with crop response, Coimbatore	7.04
10.	All India Coordinated Research project on sugarcane, Cuddalore	3.68
11.	All India Coordinated Research project on oilseeds, Coimbatore, Vridhachalam, Sandhiyur	15.00
12.	All India Coordinated Research project on jute and allied fibres, Aduthurai	2.50
13.	All India Coordinated Research project on rice improvement, Coimbatore, Aduthurai	22.65
14.	All India Coordinated Research project on sorghum, Coimbatore	10.70
15.	All India Coordinated Research project on forage crops, Coimbatore	7.10
16.	All India Coordinated Research project on cotton, Coimbatore, Kovilpatti, Srivilliputhur	21.03
17.	All India Coordinated Research project on intensification of research on the improvement of pulses, Coimbatore, Vamban	31.21
18.	All India Coordinated Research project on palm, Aliyarnagar, Aduthurai, Killikulam, Veppankulam	9.80

19.	All India Coordinated Research project on maize, Coimbatore	5.11
20.	All India Coordinated Research project on small millets, Coimbatore	8.00
21.	All India Coordinated Research project on acarology, Coimbatore	2.19
22.	All India Coordinated Research project on pesticides, Coimbatore	4.53
23.	All India Coordinated Research project on plant parasitic nematodes with integrated approach for their control, Coimbatore	4.46
24.	All India Coordinated Research project on biological control of crop pests and weeds, Coimbatore	2.87
25.	All India Coordinated Research project on seed borne diseases, Coimbatore	7.30
26.	All India Coordinated Research project on mushrooms, Coimbatore	3.47
27.	All India Coordinated Research project on betelvine wilt diseases, Sirugamani	3.96
28.	All India Coordinated Research project on weed control, Coimbatore	3.98
29.	All India Coordinated Research project on spices and plantation crops, Coimbatore, Yercaud	5.68
30.	All India Coordinated Research project on vegetables including chillies, Coimbatore	4.95
31.	All India Coordinated Research project on cashew, Vridhachalam	3.75
32.	All India Coordinated Research project on post-harvest technology of horticultural crops, Periyakulam	2.99
33.	All India Coordinated Research project on Floriculture, Coimbatore	4.04
34.	All India Coordinated Research project on tuber crops other potatoes, Coimbatore	2.32
35.	All India Coordinated Research project on tropical fruits, Periyakulam, Coimbatore	11.51
36.	All India Coordinated Research project on arid fruits, Aruppukottai	4.75
37.	All India Coordinated Research project on renewable energy sources, Coimbatore	17.13
38.	All India Coordinated Research project on farm implements and machinery, Coimbatore	18.32
39.	All India Coordinated Research project on energy requirement in agricultural sector, Coimbatore	9.23

40.	All India Coordinated Research project on intensive testing of power tiller and research and development of new machine to make them versatile, Coimbatore	7.70
41.	All India Coordinated Research project on biological nitrogen fixation, Coimbatore	10.72
42.	All India Coordinated Research project on agroforestry, Mettupalayam	5.56
43.	All India Coordinated Research project on soybean, Coimbatore	2.01
44.	All India Coordinated Research project on sub-tropical fruits (Mango), Coimbatore	12.54
45.	All India Coordinated Research project on salt affected soils, Trichy	22.64
46.	All India Coordinated Research project on pearmillet, Coimbatore	6.10
47.	All India Coordinated Research project on groundnut verification center, Tindivanam, Vridhachalam, Aliyarnagar, Bhavanisagar	14.71
48.	All India Coordinated Research project on human engineering and safety in agriculture, Coimbatore	12.73
49.	All India Coordinated Research project on post harvest technology, Coimbatore	9.12
50.	Establishment of KVK's, Vridhachalam, Sirugamani, Sandiyur	25.10

(iv) ICAR FULLY FINANCED SCHEMES

(Rs. in lakhs)

1.	Front line demonstration in oilseeds	2.49
2.	Scheme for the promotion of research and development efforts on hybrids in selected crops	15.88
3.	Front line demonstration on oilseed crops (Kharif, summer and rabi) through Krishi Vigyan Kendras	2.49
4.	Front line demonstrations on oilseeds components: Demonstrations on efficiency of rhizobium inoculants on oilseeds under the AICRP on BNF	0.66
5.	Front line demonstration on production potential of oilseed crop: soybean	0.39
6.	Front line demonstration on pulses under National Pulses Development Projects (NPDP)	0.20
7.	Oilpalm – GxE interaction	10.89

8.	Establishment of center of advance studies in genetics and plant breeding	10.32
9.	Scheme for intensification of research on vanila	3.78
10.	Establishment of center of advanced studies in Agricultural Entomology, TNAU, Coimbatore	7.34
11.	Establishment of center of advanced studies in Agronomy, TNAU, Coimbatore	12.21
12.	Establishment of center of advanced studies in Microbiology, TNAU, Coimbatore	41.25
13.	Front line demonstration in sorghum, TNAU, Coimbatore	0.40
14.	Front line demonstration in pearl millet, TNAU, Coimbatore	0.15
15.	Pilot project on tech. assessment and refinement through institution – village linkage	23.40
16.	Sustainable farming system model for lowland farms of Tamil Nadu	7.44
17.	Extension of shelf life of loose flowers of jasmine, gundumalli for export	7.09
18.	Development of Rice hybrids suitable for saline and sodic soil conditions of Tamil Nadu, ADAC&RI, Tiruchirappalli	9.35
19.	Adhoc research network- Exploitation of hybrid vigour in sesame	6.49
20.	ICAR – National Professor, AC&RI, Madurai	20.00
21.	Management of soil borne pathogens of vegetable crops using fluorescent pseudomonas as biocontrol agents	9.39
22.	Performance evaluation of drip fertigation system with liquid and water soluble fertilizers for increasing crop productivity and quality of vegetable crop (Tomato)	2.96
23.	Manufacture and supply of proven agricultural equipments and machinery	10.00
24.	Controlled atmosphere storage of paddy	19.00
25.	Research network for the application of system simulation in agriculture	13.11
26.	Video film production and distribution on cost (Revolving Fund Scheme)	8.00
27.	Developing a suitable technology to increase self life of bacterial bio-fertilizers	11.23

28.	Modification and evaluation of tractor operated tall tree sprayer for coconut, Agrl. Extension, TNAU, Coimbatore	4.48
29.	NATP-"Scheme for establishment of Agrl. Technology Information Centre", HC&RI, TNAU, Coimbatore	21.32
30.	NATP-"Development of F1 hybrids in vegetable, tomato, brinjal and chillies"	28.64
31.	Economic Analysis of Floriculture in Tamil Nadu, CARDS, Coimbatore	4.34
32.	Revolving Fund Scheme – "Mass production of pleurotus spp. Fungus for distribution to the farmers"	2.00
33.	Studies on the interaction compatibility of azosprillum and biocontrol agents in turmeric	6.12
34.	Feasibility studies on in situ green manuring in wet seeded rice	9.05
35.	Biological control of fungal, nematode complex disease of cabbage and cauliflower	8.25
36.	Recycling of hatchery and poultry waste through anaerobic digestion of large size dormer type biogass plants for getting fuel and value added organic manure	12.49
37.	Seed technology studies on six medicinal plants of commercial importance	7.62
38.	Sustaining rice yield through nutrient and water management during post panicle initiation environment	8.67
39.	Assessment of crop loss due to basal stem rot disease of coconut in Tamil Nadu its epidemyilogy and biological control	6.12
40.	Sustainable management of plant diversity in machine mode project	5.15
41.	NATP-"Development of integrated pest management technology for palm based production system"	10.01
42.	NATP-Sustainable management of plant diversity in the machine mode project	7.98
43.	FLD on rice	0.96
44.	NATP-Economic analysis of rice based cropping system in coastal agro-eco system of India	19.15
45.	Collative bargaining in agrl. labour market – Its problems and prospects in Tamil Nadu	4.73
46.	NATP-Development and important of IPM technologies for basal stem rot (Gahoderma) disease of coconut, arecenut & oil palm	34.88

47.	Design and development of container models of different capacity for removing stored project	3.10
48.	Front line demonstration on mirconutrient at farmers fields	0.34
49.	NATP-Developing integrated nutrient management and agronomic practices for rice based cropping system in the salt affected coastal soils	15.24
50.	Prototype manufacturing of agricultural implements	121.07
51.	Frontline Demonstration on Oilseeds	0.150
52.	Frontline Demonstration at Thanjavur	0.415

NARP Phase II sub Projects

(Rs. in lakhs)

I.	North Eastern Zone		
	1.	Vellore	61.58
II.	North Western Zone		
	2.	Paiyur	19.38
III.	Cauvery Delta Zone		
	3.	Aduthurai	22.13
	4.	Trichy	2.48
	5.	*Kattuthottam*	25.68
	6.	Sirugamani	36.20
IV.	Western Zone		
	7.	Bhavanisagar	24.64
	8.	Mettupalayam	55.45
V.	Southern Zone		
	9.	Periyakulam	45.32
	10.	Aruppukottai	19.50
	11.	Pudukottai	18.96
	12.	Killikulam	7.94
VI.	Hilly and Tribal Zone		
	13.	Yercaud	43.42
	14.	Vijayanagaram }	23.02
	15.	Coimbatore }	
VII.	High Rainfall Zone		
	16.	Pechiparai	66.74
	17.	Thirupathisaram	21.21

(vii) GOVERNMENT OF INDIA SCHEMES (GOI)

		(Rs. in lakhs)
1.	Regional biogas training and development center, Coimbatore	10.00
2.	Scheme for establishment of Regional center for fuel efficient stove technology (Technical backup support unit of national programme on improved chulas), Coimbatore	10.00
3.	Establishment of user center at Tamil Nadu Agrl. University, Coimbatore under Bio Technology Information System (BTIS). A National Infrastructural Facility, Coimbatore	9.66
4.	Central sector scheme for integrated programme for the development of spices, scheme for production of foundation seed of chillies and minor spices, Bhavanisagar, Periyakulam, Kovilpatti, Palur	3.92
5.	Establishment of regional nurseries for generation of cashew clonal planting materials, Vridhachalam	12.00
6.	Starting of experimental agrometerological advisory service, Kovilpatti	1.00
7.	Starting of experimental agro meterological advisory service (AAS), Aduthurai	1.00
8.	ICFRE-productivity of tamarind plantation on stress sites : physiological and silvicultural strategies to maximize yield, Mettupalayam	4.76
9.	Tree improvement in teak-ICFRE, Mettupalayam	10.98
10.	ICFRE forest tree seed technology, Mettupalayam	10.39
11.	ICFRE-Tree improvement in eucalyptus, Mettupalayam	12.46
12.	ICFRE-Tree improvement in bamboo, Mettupalayam	9.74
13.	DBT-Development of micro encapsulated formulations of nuclear polyhedrosis viruses with greater pest control potentials, Coimbatore	5.16
14.	BARC-Transfer coefficients of radionuclides in field crops and in food chain pathways, Coimbatore	17.94
15.	Bio diversity of spiders in the western ghats of Tamil Nadu, Coimbatore	8.76
16.	Starting of experimental agro meteorological advisory service, Pechiparai	1.00
17.	Establishment of insect cell lines for biotechnological applications, Coimbatore	18.17
18.	Isolation and development of virulent strains of baculovirus for the management of groundnut red hairy caterpillar, Madurai	9.07

19.	Hydroeconomic interaction between tank as well water and possibilities for conversion of tank into percolation ponds, Coimbatore	6.69
20.	CSIR scheme on isolation of vector resistance genes for sesame for controlling the phyllody disease, Coimbatore	5.52
21.	Identification of insecticidal protein encoding genes from new isoltes of bacillus thuringiensis for developing cotton transgenes, Coimbatore	11.65
22.	DBT-Engineering sheath blight resistance in rice by employing trichoderma chitinase genes, Coimbatore	17.06
23.	Setting up of food processing training center by utilizing the grant of assistance from Ministry of Food Processing Industries, New Delhi, Coimbatore	2.50
24.	DRDO-scheme-plant origin pesticides for the management of pests of fruits and vegetables, Coimbatore	7.95
25.	Dept. of Science and Technology – Celluloytic clostridia in nitrogen and phosphorus transformation of rice soil eco system, Coimbatore	2.60
26.	Setting up of food processing training center by utilizing the grant of assistants from Ministry of Food Processing Industries, New Delhi, Aruppukottai	2.00

(viii) FOREIGN AGENCY SCHEMES

(Rs. in lakhs)

1.	RFF-Search for elicitor inducible antifungal non-host chitinase gene for management of rice sheath blight, Coimbatore	12.40
2.	RFF-Identifying genes associated with water stress tolerance in rice, Coimbatore	23.00
3.	University of Guelph open learning programmes for Seed production Technology, Coimbatore	3.69
4.	IRRI,CREMNET-Onfarm evaluation of chlorophyll meter based nitrogen management, Aduthurai	2.52
5.	RFF-Molecular marker assisted selection for drought resistance improvement in rainfed lowland rice, Coimbatore	22.24
6.	SDC-Integrated pest management of leafweber in mulberry, Coimbatore	9.49
7.	RFF-Genetic Engg. of Sorghum for resistance to fungal diseases, Coimbatore	15.18
8.	NRI-CABI, Bio science, UK scheme – Collobrative Res. Project on principal pod boring pests of tropical legume crops, Madurai	2.07

9	Rockfeller foundation – Genetic Engg. of elite rice cultivars for resistance to major pests and diseases, Coimbatore	21.42
10	Rockfeller foundation – "Molecular mapping of WBPH resistance gene in rice with SSR and RFLP markers, cloning, sequencing and STS primer designing", Coimbatore	12.95
11	ACIAR Scheme – "Capturing the benefits of seasonal forecast in Agricultural Management". Coimbatore	22.69
12	Rockfeller foundation – Cloning of cry genes from new BT strains and transformation of rice with BT Genes, Coimbatore	12.55
13	Identification of dwarf and / or early duration mutants in White Ponni through RAPD screening for commercial exploitation, Madurai	4.83
14	Potash and phosphate Institute of Canada, India programme – Systamatic approach for evolving fertilizer maximum economic yield in rice based cropping system, Coimbatore	3.02
15	MKP project Israel - Monopotassium phosphate (MKP) foliar application for improving P&K nutrition, TRRI, Aduthurai	8.074
16	AVRDC scheme – "Pusa bold I mungbean (green gram) on multiplication for nutritional trials" collaborative project of AVRDC, Taiwan, TNAU and Avinashilingam Home Science Deemed University, Coimbatore	

(ix) AGRICULTURE AND INDUSTRY ORIENTED PRIVATE AGENCY SCHEMES

(Rs. in lakhs)

1	Scheme for institution of professional chair in agricultural marketing, Coimbatore	1.35
2	IFFC- Establishment of a chair of Professor of Agronomy for research in fertilizer use and management, Coimbatore	7.02
3	Ralli India – Establishment of a chair of Professor of Agricultural Entomology, Pesticide Toxicology, Coimbatore	0.85
4	Bayer (India) Ltd., - Endowment of professornal chair in Entomology, Coimbatore	10.00
5	Kothari Sugars – Fortified pressmud and spent wash used as an organic source of nutrients, Trichy	13.36
6	SIV-Decolourisation of Viscose factory effluent, Coimbatore	15.12
7	Spices board–Mass multiplication and supply of tamarind, Coimbatore	2.10
8	ICI Pharma Ennore-Assessment of sludge & effluent of ICI pharma for sustaining soil and environmental health, Coimbatore	4.93

9.	Godrej Agrovet-Physiological & Biochemical effects of brassinolides on the productivity of rice and groundnut, Coimbatore	0.98
10.	Zenica ICI chemicals – Studies on testing bioefficacy and persistence of systemic fungicide ANVIL against rice sheath blight, groundnut tikka leaf spot & powdery mildew on grape, Coimbatore	3.90
11.	Madras Fertilizers Ltd.,-Development of acid tolerant Azospirillum for tea, Coimbatore	1.18
12.	Thiru Aroran Sugars-Recycling of primary treated distillery effluent in sugarcane, rice & cashew as source of fertigation, Coimbatore	3.00
13.	De Nocil-Evaluation of bioefficacy of Spinosad & Accetamiprid (NI-25) on pests of cotton, Madurai	9.00
14.	Cotton Corporation of India-Pneumatic cotton picker, Coimbatore	6.50
15.	EID Parry-Development of deep trencher attachment to tractor for paired row planting of sugarcane setts, Coimbatore	0.77
16.	Cotton technology dissemination through correspondence course, Coimbatore	3.77
17.	Effect of Seshayee effluent on crop cultivation and land application, Coimbatore	0.63
18.	An econometric analysis of coconut industry in Tamil Nadu Coimbatore	10.50
19.	Evaluation of Sulphur rich material of Cochin Refineries Ltd., Coimbatore	9.00
20.	Novartis "Studies on the bioefficacy and residues of profenofos diafenthiryn metalaxyl and propiconazole on cardomom, cashew and chilli, Coimbatore	6.56
21.	M/s Gharda Chemicals –Bioefficacy of diflubenzuron against bollworm complex in cotton and its residue in cotton, Madurai	2.41
22.	Zeneca - ICI "Evaluation of arid 5EC against sigatoka leaf spot of banana and persistence cum dissipation studies on fruits, flowers and stem" Coimbatore	3.60
23.	Zeneca – ICI "Evaluation of anvil 5SC on powdery mildew control in chilli and okra and persistence cum dissipation studies on fruits" Coimbatore	3.65
24.	Zeneca – Studies on the bioefficacy and residue of lambdacyhalothrin 5EC in coffee, cardamom, cashew and residue of lambdacyhalothrin etc., Coimbatore	3.61
25.	FACT-Evaluation of slow release fertilizer on cotton and turmeric, Coimbatore	7.50

26.	SPA Marketing Ltd. – "Relative efficiency of controlled release fertilizer on vegetable crops : tomato and chillies ", Coimbatore	0.90
27.	Monsanto Enterprises – "Evaluation of long term effect of conservation tillage and weed management practices by using glyphosate on weed growth and yield of transplanted rice" , Coimbatore	4.60
28.	Evaluation of diammonium phosphate coating agent in sugarcane, Coimbatore	0.70
29.	DE-NOCIL-"Evaluation of the bioefficacy of plant growth regulators of Indian association of plant growth products", Coimbatore	1.25
30.	ZENECA-ICI "Studies on sulphosate residues in grapes", Coimbatore	2.84
31.	M/s Borax Morarji Ltd., - "Studies on the use of agribor as a source of boron for crops", Coimbatore	2.85
32.	M/s FAI, New Delhi, Balanced fertilization for correction of 'S' deficiency, Coimbatore	1.09
33.	IGIDR – Common property regimes – their historical perspective and agricultural systems, Coimbatore	6.20
34.	Integration of aquaculture within irrigation systems, Coimbatore	32.26
35.	The efficiency of herbicides on the weed flora under soyabean cultivation systems, Madurai	1.20
36.	Evaluation of roundup CT in transplanted Rice, Madurai	2.40
37.	Gharda Chemical Ltd., - "Evaluation of herbicide triclopyre residue in Rice", Coimbatore	2.98
38.	M/s Monsanto Enterprises – "Study on the bioefficacy of glyphosate formulation on general weed control under non-crop situations", Coimbatore	1.50

(x) OTHER AGENCIES SCHEMES

(Rs. in lakhs)

1.	HADP – Development of cut flower in Nilgiris, Ooty	2.00
2.	HADP – Development of medicinal and aromatic plants by establishing herbal garden, Ooty	0.60
3.	HADP – Mushroom training and supply of mushroom spawn, Ooty	1.00
4.	HADP – Scheme for identification of suitable beneficial microbial strain for vegetable crops (Biofertilizers), Ooty	3.00
5.	Rejuvenation of hill banana cultivation in Dindugal district – Eradication of bunchy top diseases – cost of survey, identification of healthy clumps and testing for virus etc., Periyakulam	5.00

6.	HADP – Biological control of hilly crop pest and diseases, Ooty	3.00
7.	HADP – Promotion of new horticultural spices of Nilgiris, Ooty	1.00
8.	Sthalavirusham "Scheme on micropropagation of tamarind and pomegranate and field evaluation of micropropagated banana plant (Endowment), Coimbatore	0.95
9.	TNSC&ST – Scheme on developing high yielding oyster mushroom with diserable quality traits, Madurai	2.01
10.	Study to examine the causes and effect of land use pattern in wet, semi-dry, production environments in Tamil Nadu, Coimbatore	3.00
11.	TNSC&ST – Issues, option and prospects for maximizing hybrid rice productivity in Tamil Nadu, Madurai	1.95
12.	HADP – TNAU publications, Ooty	1.25
13.	HADP – Studies on the effect of bio dynamic and farming in vegetable crops in Nilgiris, Ooty	1.00
14.	HADP – Scheme for the evaluation of suitable varieties of cauliflower, beans and carrot of Nilgiris, Ooty	1.50
15.	HADP – Mass production of bio control agent meterrhizium for control of white grubs, Ooty	4.40
16.	Central sector scheme – "Establishment of tissue culture laboratory on integrated programme for development of tropical and arid zone fruit crops, Periyakulam	21.00
17.	Evaluation of sugarcane varieties resistance to red rot disease with high yield and high quality - sugarcane cess funds, Cuddalore	274.66

APPENDIX III

LIST OF RESEARCH PAPERS PUBLISHED

AGRICULTURAL BOTANY

1. Ali, A.J. and E.A. Siddiq, 1999. Induction of mutations affecting floral traits in rice (*Oryza sativa* L.) **Indian J. Genet.**, 59(1) : 23-28.

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4. Ali, A.J., E.A. Siddiq, F.U. Zaman and S.E.Naina Mohammed, 2000. Identification and characterization of temperature sensitive cytoplasmic – genetic male steriles in rice. (Oryza sativa L.). **Indian J. of Gene.** 60(1) : 15-23.

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7. Punitha, D., and T.S.Raveendran, 1999. Heterosis studies in interspecific coloured linted cotton genotypes (*Gossypium hirsutum x Gossypium barbadense*) **Crop Research** 17(3) : 315-317.

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13. Jayashree Madhavan and M.Subramanian, 1999. Studies on crossability and fertility restaration in hybrid rices involving cyto sterility. **Vistas of Rice** (Ed. M. Subramanian), TRRI, Aduthurai, Tamil Nadu, pp.152-158.

14. Kalamani, A. 1999. Induction of dwarf mutant in rice with gamma rays. **Biotechnology Quarterly,** 40 : 20, November.

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19. Muthiah, A.R., T. Kalaimagal, and D. Sassikumar, 1998. Cost of seed production – redgram hybrid CoPH2. **Legume Res.** 21(1) : 65-66.

20. Nadarajan, N., P.Vivekanandhan and Robert J.Henry. 1999. Use of molecular markers for diversity analysis in rice. **Indian J. Genet.,** 59 (3):247-259.

21. Nasir Ahmed, S. and S. Giridharan, 1999. Yield and quality of Mid late maturing Sugarcane genotypes in Tamil Nadu. **Co-operative Sugar.** 31(2) : 121-122.

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25. Philomina. D., A.K.Fazlullah Khan. 1998. Genetic interrelationships between fodder attributes and Path analysis in Guinea grass. **Madras Agric. J.,** 85 (10-12) : 690-692.

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31. Ramalingam, A., and M.Gunasekaran, 1999. Variability, heritability, genetic advance and multivariate analysis in rice varieties under alkaline stress condition. **Vistas of Rice** (Ed. M. Subramanian), TRRI, Aduthurai, Tamil Nadu, pp.176-183.

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33. Ramalingam, J., N. Nadarajan and C.Vanniarajan. 1999. Outcrossing potential and its relationship with floral traits in rice. **Oryza**. 36 :162-164.

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41. Sankarapandian, R., S. Rajarathinam and A. Muthusankaranarayanan 1998. Phenotypic stability. **Andhra Agrl. J.** 43 : 15-19.

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52. Thirumeni, S., and M.Subramanian, 1999. Heterosis of Na^+ : K^+ ratio, yield and yield components in coastal saline rice hybrids. **Vistas of Rice** (Ed. M. Subramanian), TRRI, *Aduthurai, Tamil Nadu, pp.188-191.*

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